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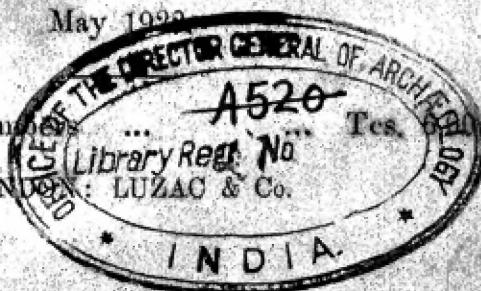
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THE SIAM SOCIETY.

(FOUNDED 1904.)

For the Investigation and Encouragement of Arts, Science
and Literature in relation to Siam, and neighbouring
countries.

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C O N T E N T S.

	PAGE.
Annual Report for 1921 I
Statement of Accounts for 1921 III
List of Members ...	... V-XI

PAPERS.

I Notes on some old Siamese Guns, by C. A. Seymour Sewell, M. A. ...	... 1
II Contribution to the knowledge of the Insect- Galls of Siam, by Dr. W. Docters van Leeuwen, Buitenzorg, Java ...	... 44



ANNUAL REPORT 1921.

The year 1921 has been a memorable one in the history of the SIAM SOCIETY, in fact it might be described as the *Annus Mirabilis* of the Institution. Ever since the War, the membership had been growing smaller and beautifully less;—ordinary General Meetings had been of very rare occurrence, and to the outward eye the Siam Society seemed to be approaching the moribund condition. But during the past year great events have happened, and the Society is now in a stronger position than it has ever been since its foundation in the year 1904. During that period the Society has lost only 4 members, three resigning and one through death. The Ordinary Membership stands at 187, of which no less than 120 have been elected during the year 1921. It is also a pleasure to notice that the Siamese are taking more interest in the Society, there being now 10 members of that nationality.

Turning to the work of the Society for the past year, four Ordinary General Meetings have been held, at which papers of great interest were read by Messrs, Cœdès, Hansen, Sewell, and Seiden-faden. Much good work has been done by the Ethnological Sub-committee which, in reply to the "questionnaire" circulated by the Society have received very valuable answers from Chiengmai, dealing with the Red and the White Karen, Shans, Yaos, Lü and Meo. It is most gratifying to note that these answers have come from Siamese, who are thus showing their interest in their own country. It is a matter for regret that only two parts of the Journal have appeared this year, but the Publishing Sub-committee have now plenty of material on hand, and can promise a much larger output for 1922. The Council also expects to have a good programme of interesting papers to be read before the Society during the year. Good progress is being made with the printing of the Rev. R. Halliday's Mon-English Dictionary 150 pages having been already printed off. It is hoped that the said work will be published before the middle of 1922. In July a Dinner was held at the Hotel Royal to celebrate the fact of the Society's having attained its 100th member. H. R. H. Prince Damrong, the Vice-Patron of the Society was present and a very pleasant evening was spent.

From the statement of accounts, it will be seen that the Society is in a very sound financial position and thus the year 1922 opens with the brightest prospects.

B. O. CARTWRIGHT,

Hon. Secretary.

Statement of accounts for 1921.

Receipts.	Ticals	Stgs.	Expenditure.	Ticals	Stgs.
Balance from 1920, at Hongkong & Shan- ghai Bank ...	1,473	84	Bookcase ...	360	00
Subscriptions received for 1920	220	00	Stationery ...	42	65
do. do. 1921	3,345	00	Refreshments at General Meetings ...	78	90
do. do. 1922	150	00	Dinner on 2nd July 1921 ...	245	00
Sale of Journal ...	136	01	Purchase of books for Library ...	166	00
Sale of bookcase ...	70	00	Printing questionnaires, forms and circulars ...	104	00
Odd receipts Tes. 22.50			Typewriting and dupli- cating Mr. C. A. Sey- mour Sewell's paper, and photographs for same; addressing		
Dinner of July 2nd Tes. 50.00	72	50	Journal ...	86	00
Interest ...	23	86	Hon. Secretary's postages ...	17	89
			Hon. Treasurer's postages ...	80	13
			Sundries ...	39	93
			Printing Journal, Vol. XIV, Part I ...	490	80
			Fixed deposits Tes. 2,000 4%, due on 5th July 1922.		
			Tes. 1,000 3½% due on 5th Jan. 1922.	3,000	00
			Balance of current ac- count at Hongkong & Shanghai Bank ...	779	91
Ticals ...	5,491	21	Ticals ...	5,491	21

J. G. RAGGI,

Hon. Treasurer.



List of Members of the Siam Society.

December 1921.

Ordinary	...	...	187
Honorary	...	...	13
Corresponding...	...	...	8
			208

Ordinary Members

A

Andersen, H. C.	...	...	Tachin.
Andersen, Major P. J.	...	...	Gendarmerie, Ayuthia.
Andersen, C. W.	...	...	Harbour Department.
Aran Raksa, Phra	...	...	Forest Department.
Ardron, G. H.	...	...	Siam Commercial Bank.
Ayer, Dr. I.	...	...	Rama I. Road.
Atkinson, R. D.	...	...	Siphya Road.
Atha Konchanart, Phra	...	...	Dept. of Public Prosecutions.

B

Beaman, A. W.	...	...	Siam Import.
Beque, F.	...	...	Ministry of Justice.
Béranger, M.	...	...	Wireless Road.
Bhakdi Norasresth, Phra	...	— do. —	
Bigg-Wither, Major H. G., D.S.O.	...	— do. —	
Bisgaard-Thomsen, L.	...	Sanparsat Road.	
" " Mrs.	...		
Boher, Rev. E.	...	...	Songkhon, <i>via</i> Saigon, Savannakhet.
Bossoni, Dr.	...	...	Bang Ma.
Boran Rajadhanindr, Phya	...	...	Ayuthia.
Brewitt-Taylor, L.	...	...	B. B. T. Corporation.
Bronnich, F.	...	...	Siam Electricity Co.
Bruun, J.	...	...	Menam Motor Boat Co.
Bailey, J.	...	...	British Legation.

Blankwaardt, W.	...	...	S. A. E.
Brooks, G. R.	...	...	Meklong Railway Office, Chartered Bank Lane.
Bunsri Kasem, H. S. H. Moin Chao			Samsen.
Brighouse, S.	...	...	Klong Teui.
Brantjes, H. J. A.	...	...	Indian Timber Import Co.
Bainbrigge, J.	...	...	United Club.
Bird, H. R.	...	...	British Legation.
Bell, J. R.	...	...	Irrigation Department.
Bangkok Library Association			
Béguelin, Ch.	...	...	Public Health Department.
Bolethep, Chao Phya		...	Ministry of Agriculture.

C

Canova, G.	...	...	Rong Muang Road.
Cartwright, B. O.	...	...	Sala Deng.
Chorin, Rev. L. A.	...	...	Assumption College.
Cœdès, G.	...	...	Rong Muang Road.
Cole, Miss E. S.	...	...	Watana Witya Academy (absent)
Colley, N. G.	...	...	Siam Import.
Crosby, J., C.I.E., O.B.E.	...	...	British Legation.
Carthew, Dr. M.	...	...	Klong Teui.
Cambiaso, Count S.	...	...	R. R. D.
Carstensen, F. C.	...	...	Assistant Postmaster General.
Christmas, P.	...	...	Sathorn Road.
Culley, G. C. H.	...	...	— do —
Cox, G. T.	...	...	C/o Messrs Leonowens.
Crammer, C. G.	...	...	Steel Brothers.
Chalant, F.	...	...	French Legation.
Chalad Lobloesar,			
H. S. H. Moin Chao	...	...	R. R. D.

D

D'Arcy, F.	...	...	c/o Messrs Whiteaway Laidlaw.
Davis, J. S.	...	...	American Legation.
Day, Major Leo	...	...	Sathorn Road.
Dharmasakti Montri, Chao Phya	...	...	Ministry of Education.
Desgruelles, Major C.	...	...	Sathorn Road.

Didier, F.	...	... Suriwongse Road.
Van Dort, K.	...	... } Rong Muang Road.
" Mrs.	...	
Duplatre, L.	...	... Ministry of Justice.
Dunlop, J. M.	...	... Convent Road.
Drakeford, A. P.	...	... Sathorn Road.
Dit Bunug, Nai	...	... (Bangkok United Club).
Davy, E. R.	...	... c/o Messrs Barrow Brown.

E

Eastwood, E. B.	...	... Tit Heng's Buildings.
Eliot, Sir Charles	...	... British Legation, Tokyo Japan.
Elsie, H.	...	... Sathorn Road.

F

Facchinetti, M.	...	... Preak Ban Nai.
Federated Malay States Museums		Kuala Lumpur.
Fegen, W. W.	...	... Bangkok Daily Mail.
Ferrero, A.	...	... Royal Privy Purse Department.
Forno, E.	...	... Pan Road.
Forsyth, G. G. S.	...	... Hongkong & Shanghai Bank.
French Legation.		
Foss, Comdr. G.	...	... Harbour Department.
Ford, F. J.	...	... Whiteaway Laidlaw.
Foster-Pegg, H.	...	... Messrs Leonowens,
		Nakon Lampang.
Flashman, Capt. H.	...	... Windmill Road.

G

Gairdner, K. C.	...	... Raheng.
Garrett, Major H. B.	...	... Phrae.
Gee, C. D.	...	... Irrigation Department.
Giles, F. H. (Phya Indra Montri)		Revenue Département.
Gilmore, W. M.	...	Sathorn Road.
Gadadharabodi, Phya	...	Phya Thai.
Godfrey, E. J.	...	Sathorn Road.
Grut, Comdr. W. L.	...	Siam Electricity Co.
Glover, Dr.	...	Windmill Road.

VIII

Gayetti, Dr. C.	...	... Sala Deng.
Graham, W. A.	...	... Sathorn Road.

H

Hale, A. H.	...	... Siphya Road.
Halliday, Rev. R.	...	... Nakon Patom
Hansen, Dr. C. C.	...	... Lotus Dispensary.
Hensen, G.	...	... Siam Electricity.
Healey, E.	...	... Samsen.
Helvard, A.	...	... Rama I. Road.
Hendrick, S. H.	...	... Anglo-Siam Corporation
Hjartved, J. A.	...	... Siam Electricity Co.
Hogge, C. E. W.	...	... China Mutual Life Insur. Co.
Hunt, G. W. P.	...	... American Legation.
Huber, H. J. W.	...	... Netherlands Legation.
Harrop, F. S.	...	... Arts Crafts School.
Hart, H. H.	...	... 3363, Washington Street, San Francisco, U. S. A.
Huese, J.	...	... Sala Deng.
Henderson, H. B.	...	... British Legation.
Hillyer, R. A. N.	...	... — do —
Holm, A.	...	... East Asiatic Co.

I

Irwin, Rev. R. American Bible Society.
----------------	-----	-----------------------------

J

Jarmer, Lieut.-Col.	...	... Local Gendarmerie.
Jenkins, T. R.	...	... Pradumagunga School.
Jørgensen, E. W.	...	... Harbour Department.
James, Dr. Eldon R.	...	... Ministry of Foreign Affairs.
Jesus, F. G. de	...	... Siam Electricity Co.
Johnson, W. G.	...	... Sathorn Road.

K

Kluzer, G.	...	... Pratu Sam Yot.
Kerr, Dr. A. F. G.	...	... Chiengmai.
Klitgaard-Lund, G. L.	...	... East Asiatic Co.

Kundzon, J.	...	Siam Electricity Co.
Kunz, H.	...	Bumrung Muang Road.

L

Lawson, Lieut.-Gen. E. St. J.	...	Ministry of Local Govt.
L'Evesque, C.	...	Ministry of Justice (absent).
Lindsay, J. M.	...	Klong Teui.
Lloyd, W. F.	...	Forest Department.
Lund, V.	...	Sathorn Road.

M

McBeth, J. J.	...	British Dispensary.
Manfredi, E.	...	Royal Fine Arts Department.
Marlow, J. A.	...	Siam Electricity Co.
McFarland, Dr. G. B.	...	Sathorn Road.
Mendelson, Dr. R. W.	...	Sala Deng.
Michell, J.	...	Rong Muang Road.
Moore, R. A.	...	Bangkok Times.
Mundie, W. H.	...	Bangkok Times.
Maire, Madame	...	Oriental Hotel.
Mathews, M. B.	...	Hongkong & Shanghai Bank.
Mountain, A. W.	...	c/o Messrs Leonowens, Nakon Lampang.
Milhuisen, R. J.	...	Royal Pages College.
Maxwell, N.	...	Sathorn Road.
Misumi, S.	...	Japanese Legation.
Mackenzie, Capt. A. D. F.	...	Foreign Office, Bangkok.

N

Nicolas, R.	...	Royal Pages College.
Niel, C.	...	Suriwongse Road.
Notton, C.	...	Chiengmai.
Nunn, W.	...	Klong Teui

P

Palmer, Rev. M. B.	...	Bangkok Christian College.
Petithuguenin, P.	...	Russo-Asiatic Bank, Peking.
Pila, F.	...	French Legation.

Pistono, F.	...	Royal Privy Purse Department.
Pradère-Niquet, R.	...	(absent).
Poix, Dr. A.	...	Wireless Road.
Praison Salaraks, Phra	...	Moulmein, Burma.
Petersen, V. L.	...	Pilot Office.
Perl, F. H. L.	...	c/o Messrs Couper Johnston & Co.
Perrins, D. L.	...	Messrs. Leonowens.
Polain, M.	...	Belgian Legation.
Pickford, H. L.	...	Hongkong & Shanghai Bank.
Paulger, R.	...	Sathorn Road.

R

Raggi, J. G.	...	Sathorn Road.
Redfield, Dr. J. R.	...	Department of Public Health.
Rémy de Planterose	...	Ministry of Justice.
Rowland, A.	...	Pracha Chin Road.
Robert, Dr. L.	...	Pasteur Institute.
Rees, M. H.	...	Saansen Power Station.
Rae, W. W.	...	Hongkong & Shanghai Bank.
Robertson, D.	...	Borneo Co.

S

Saunders, H. O.	...	Messrs Sampson & Son.
Seidenfaden, Major E.	...	Siam Electricity Co.
Sewell, C. A. S.	...	Royal Pages College.
Simon, P.	...	French Legation.
Sinclair, J. M.	...	Bangkok Dock Co.
Slack, T. A.	...	Klong Teui.
Smith, Dr. M.	...	Suriwongse Road.
Stanway, F.	...	Rong Muang Road.
Swanson, J. H.	...	Sathorn Road.
Swanson, Jas.	...	Samsen.
Schultz, O.	...	Siam Cement Works, Bangsue.

T

Tamagno, M.	...	Ministry of Local Govt.
Thavenot, A. F. N.	...	Singora.

Thune, E.	...	... Siam Cement Works, Bangsue.
Tait, Dr. R. J.	...	... Local Sanitary Department.

V

Vibulayuraved, Col. Phya	...	... Chulalongkorn Hospital.
Vosper, T.	...	... Ministry of Justice.

W

Walton, E. J.	...	... B. B. T. Corp.
Williams, C.	...	... American Legation.
Williamson, W. J. F.	...	... Sathorn Road.
Wilson, R. C. R.	...	... Sathorn Road.
Worrall, H. E.	...	... Sena Amatyabhorn, Sikak Phya Sri.
Wright, G. K.	...	... Wireless Road.
Wishart, A.	...	... Bangkok Dock Co.

X

Yandravidya, Luang	...	... Irrigation Dept.
Yetts, C. M.	...	... Siamese Tin Syndicate Renong.



NOTES ON SOME OLD SIAMESE GUNS.

PAPER READ AT AN ORDINARY GENERAL MEETING OF
THE SIAM SOCIETY, 14TH SEPTEMBER 1921,
BY C. A. SEYMOUR SEWELL, M. A.

In the Government Museum at Madras are four old Siamese Cannon, received some years ago from the Arsenal at Fort St. George. When I was on a visit to the Madras Presidency early in 1917 I met Dr. J. R. Henderson, then superintendent of the Museum, who, on learning that I came from Siam, asked me if I could assist him to ascertain the meaning of certain inscriptions on these cannon which he understood to be in Siamese characters. I promised to do what I could in the matter, and he subsequently sent me estampages of these inscriptions with a covering letter stating that these guns were taken at Mandalay in 1885 and that from Burmese inscriptions upon them it appeared that they had been captured previously by the Burmese at Dwarawati (Ayuthia) in 1128 (A.D. 1766) by Sinbyinyin, King of Burma. Dr. Henderson hoped that the Siamese inscriptions would carry their history still further back.

Each gun bears one or more inscriptions in Siamese showing to which division of the army it belonged. The engraving is rough.

No. 1. has the words “ព្រះរាជក្រឹង” Inner Guard left wing.

No. 2. do. “ព្រះមហាក្សត្រ” Main Guard left wing.

No. 3. do. “ព្រះនគរ” Inner Guard right wing.

No. 4. do. “ព្រះសង្គ” Inner Guard right wing.

These are subdivisions of the Krom Phra Tamruct (ក្រោមព្រះរាជក្រឹង) which in the Ayuthia period was divided into three portions ព្រះនគរ, ព្រះមហាក្សត្រ and ព្រះសង្គ, the inner Guard, Main Guard, and outer Guard,

each composed of two wings, right and left.* The force still survives in the present Tamruet Guard or Body Guard of Gentlemen at Arms.

In addition to these inscriptions No. 1 has the words ແລ ທິ່ນ ທະຫວັນ (In the Royal Host) followed by another word which cannot be deciphered with certainty but may be ຖອງ (a body of troops) or ເມື່ອ ອີ. There is a similar inscription on one of the cannon at the Ministry of War in Bangkok, and I find the same difficulty in reading it. (Vid. No. 56).

Cannon No. 2 has two other marks meaning respectively 6 ticals (baht) and 6½ catties (chang):—

៥ ປິມ = 6 baht
(approx. 15 Grammes)

៥ = 6½ chang
(approx. 1.2 Kg.)

I have been unable to obtain any satisfactory explanation of these. Phya Boran Rajatanin, replying to an enquiry of mine, suggested that they might possibly denote the weights of powder used for priming and charging respectively, but asked for further details as to the dimensions of the weapon. When these were sent to him he came to the conclusion that his suggestion was not the correct solution, for a charge of 1½ catties only would have sufficed for a gun of this calibre, 5 inches. "However," he writes, "the meaning of the weight mark is not yet clearly understood."

Nos. 1, 3, and 4 have Burmese inscriptions. Those on 1 and 4 are identical and mean "Captured at Dwarawati in 1128" (A. D. 1766).

* Preserved in the National Library is an old MS. entitled "ແບບຕະຫວັນນິຍາມ ມະຫາດເສັກ". The text of this, with a preface by Prince Damrong, was printed under the amended title "ຕໍ່ມາຮ້າງ ແຂກ ຄົມ ຄຽງ ກ່າວ" (A treatise on the Court Officials of the

Ayutthia period), by order of H. R. H. The Prince of Chaiyad for distribution at the cremation of the late Phya Nava-balayuyok, (Rong Bimb Thai, Rong Muang Road, Bangkok, B. E. 2459). This work contains a chapter on the duties of the Tamruet, in which the same are defined and the appropriate habits to be worn and weapons to be carried upon various occasions are set forth. Incidentally considerable light is cast upon the customs and pastimes of the court of those days. Among the latter musket practice is mentioned as one in which both sovereign and officials were wont to indulge, it being the duty of the Tamruet to set up the targets and to keep the score. Another form of amusement was the baiting of tigers, which appear to have been kept in cages at the end of the Lake—ເທື່ອ ດວງ ກ້າປ້ ສັບ ນັນ. I mention this last and quote the Siamese text because it has a bearing on a point which will be raised in the course of this paper.

That on No. 3 is longer and has been translated by Mr. C. Duroiselle, Government Epigraphist for Burma, as follows:—

"Captured at Dwarawati after 9 o'clock in the night on Tuesday the 9th day of the increasing moon of the month Tagu 1128. (Tuesday 18th March A.D. 1766).

This date is almost exactly a year prior to the final conquest of the city which took place in April 1767, so these guns must have been taken at the fall of some of the outer works or in one or more of the numerous sorties from the city.

Nos. 1, 2 and 4 are old European cannons, Nos. 1 and 4 having the coat of arms of the House of Orange and the motto in relief. No. 1 has the motto in full:

JE MAINTIENDRAY

and is dated 1602;

on No. 4 the motto is blundered thus:—

JE MAINLINVW AE

Cannon No. 3 bears a semi-circular inscription in Siamese characters which establishes the fact that it was made in Siam. It runs as follows:—

กู กอ หล่อ ใน วัน พุ่ม เดือน หก
ธีน บิลสาม ค่า ๙๐๘ สม្រេចិនិក
ເພែ វុ ແគោ សង នាកិរ ហក
ហក ទុ គិរាយ ១០៤០

Certain characters at the end of lines 2 and 4 are much obliterated and the readings given are the conjecture of M. Coedès. If that in line 2— សម្រេចិនិក — is correct, the final date ១០៤០ is correct also, for there are only two years សម្រេចិនិក between the years 1000 and 1100 Chulasakaraj—viz. 1030 and 1090. Calculation shows that the first of these is inadmissible, but that the second agrees with the other data given in the inscription. Reference to the chronological tables fixes this date as the 10th April A.D. 1728.

The meaning of the inscription is:—

"Ku commenced to cast on Wednesday the 13th day of the waxing moon of the sixth month in the year of the Monkey, the last of the small cycle, at two hours thirty-six minutes after sunrise, Chulasakaraj 1090."

The reigning monarch at that time was King Thai Sra—
သနရာရိ မြေဆိပ် ကျော်မင်း ကျော်မင်း မင်္ဂလာ ၁၀၆၈-၁၀၉၄ (A. D. 1706-1732). At first I was of opinion that the word "ကျော်" was a pronoun and referred to him. If that were so, this piece would seem to have been cast upon some special occasion at which the sovereign presided in person and, on that account, to have been held in particular esteem. When it fell into the hands of the Burmese it would have been regarded as a particularly fine trophy; hence the more detailed Burmese inscription of which it was considered worthy. But though this pronoun was used by the kings in earlier days, it had fallen into disuse by the end of the seventeenth century. It seems more probable, therefore, that the word "ကျော်" is the name of the person who cast the weapon.

At my request Dr. Henderson sent me the following measurements of these old cannon:—

No. of cannon.	Total length.	Length of barrel.	Diameter of bore.
(1) Arms of Orange	8ft. 6½ in.	7ft. 11½ in.	2½ in.
(2) European	8ft. 5½ in.	6ft. 11½ in.	5 in.
(3) Siamese	9ft. 6½ in.	7ft. 3 in.	4½ in.
(4) Arms of Orange	7ft. 7 in.	5ft. 4½ in.	3½ in.

From these figures it may be deduced that:

No. 1 is a nine, or possibly twelve pounder,

No. 2 a sixty pounder,

No. 3 a forty pounder,

No. 4 a fifteen, or possibly eighteen pounder.

No notes upon Siamese cannon in other countries would be complete without reference to those that played a part in the storming of the Bastille on 14th July 1789, a pair sent by King Phra Narai to Louis XIV., of which mention is made by Thomas Carlyle in his book "The French Revolution" (Book V. Chap. VI.) as follows:—"See Georget, of the Marine Service, fresh from Brest, ply the King of Siam's cannon. Singular (if we were not used to the like): Georget lay, last night, taking his ease at his inn; the King of Siam's cannon also lay, knowing nothing of him, for a hundred years. Yet now, at the right instant, they have got together, and discourse eloquent music. For, hearing what was toward, Georget sprang from the Brest Diligence, and ran. Gardes Françaises also will be here, with real artillery: were not the walls so thick!"

These guns are described by de Chaumont* as "two pieces of cannon six feet long made of malleable iron, beaten while cooling (de fonte, battuës à froid), inlaid with silver, mounted on carriages also inlaid with silver, and made in Siam."

My interest in old Siamese cannon having been aroused, it was with great pleasure that I was enabled to visit the collection arranged in front of the Ministry of War in Bangkok with M. Coedès, thanks to the courtesy of H. R. H. the late Prince Bisnulok.

The majority of the guns appear to be of native workmanship, and bear distinctive names, taken in many instances from Hindu Mythology, traced along the barrels in old Siamese characters, together with marks denoting their calibre and the quantity of powder required for the charge. A considerable number, however, are of European origin, and some of those, too, bear names in Siamese characters. A metrical list of the names of ninety-one guns is to be found in a Siamese work entitled คำ เนื้อเป็น นาม กษัตริย์ (Royal Names given to Royal Palaces, Residences, Gates, Forts, Ships, Elephants, Horses, etc.), with a preface by H. R. H. Prince Damrong Rajanubhab, B. E. 2457, published by the Charoenphol Printing Press, New Road, Bangkok (โน พิมพ์ เจริญ ผล). I have been told that these names

* Relation de L'Ambassade de M. le Chevalier de Chaumont à la Cour du Roy de SIAM. MDCLXXXVI. Mémoires des Présents du Roy de SIAM au Roy de FRANCE.

were given and the list compiled by the late King Phra Nang Kiao; but this cannot be correct, for a MS. in the National Library records the dates of ceremonies at which the names of many of the pieces were conferred or inscribed. These dates are all in the years 1155 and 1156, i.e., between A. D. 1793 and 1795, during the first reign. The MS. also contains a list of names in the same order as that in the work referred to, but somewhat shorter. Probably King Phra Nang Kiao made additions to this already existing list. The names of the cannon standing outside the Ministry of War are, with a few exceptions, included in it; but the list itself is no guide to the disposition of the pieces, so I have made a plan of their positions, numbered in the order in which we visited them, and have compiled a list of their names in the same rotation.

THE GUNS.

In the following description the mark o placed opposite the name of a gun signifies:—Mentioned in the old MS.

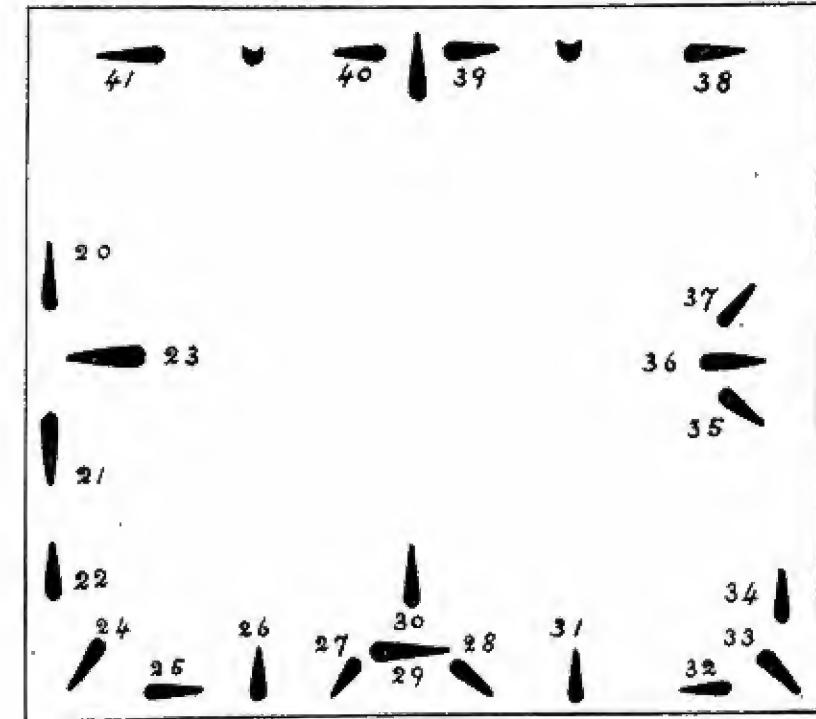
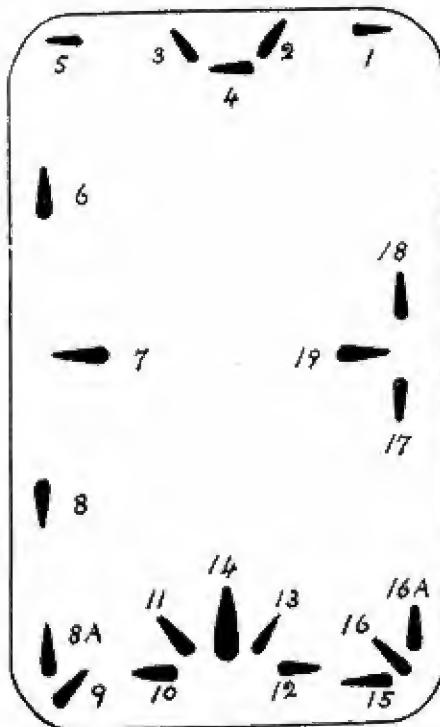
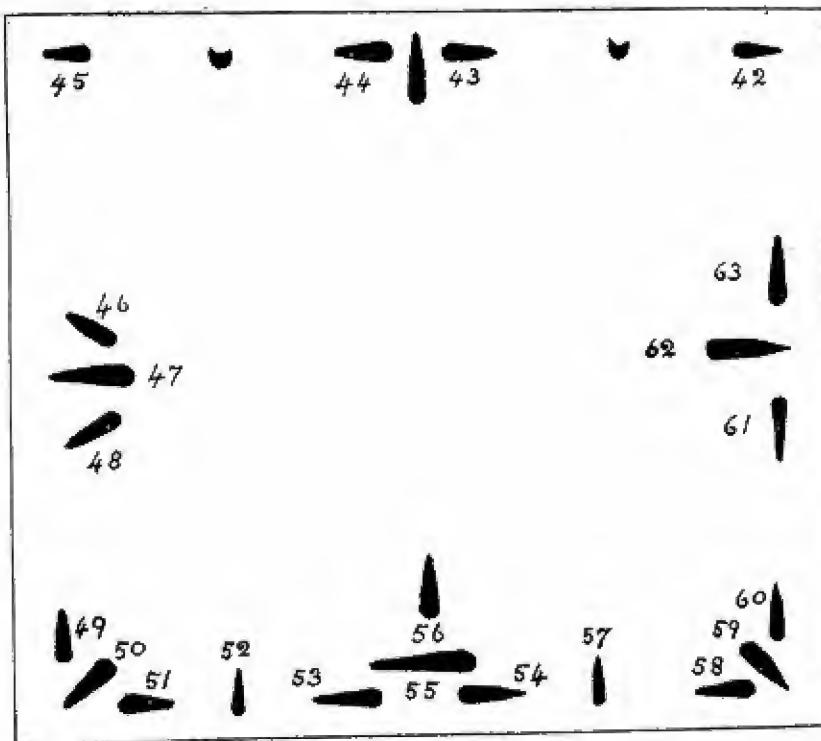
The dates on which ceremonies of inscription were held are shown thus:—

- || = Saturday the second day of the waxing moon
of the third month, 1155
- § = Tuesday the eleventh day of the waning moon
of the seventh month, 1155
- z = Saturday the fifth day of the waxing moon
of the sixth month, 1156
- ‡ = Saturday the tenth day of the waxing moon
of the seventh month, 1156
- × = Saturday the fourteenth day of the waning moon
of the eighth month, 1156

The numerals in brackets are the numbers of the guns in the List of Royal Names.

The collection comprises some sixty odd pieces. Twenty-nine of these fall into three definite classes, the remainder form a miscellaneous collection, so miscellaneous indeed that it has seemed hopeless to try to classify them, and I have therefore decided to take them more or less in the order followed by Professor Coedes and

MINISTRY OF WAR.



Plan showing positions of the guns September, 1921.

To face page 6

$$\frac{d\eta}{dt} = \eta^2 - \eta^2_{\infty}$$

$$= \left(\frac{\partial}{\partial x_1} \frac{\partial}{\partial x_2} \dots \frac{\partial}{\partial x_n} \right) \left(\frac{\partial}{\partial x_1} \frac{\partial}{\partial x_2} \dots \frac{\partial}{\partial x_n} \right)^T = \left(\frac{\partial}{\partial x_1} \frac{\partial}{\partial x_2} \dots \frac{\partial}{\partial x_n} \right)^2$$

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myself, a method which will enable this paper to be used as a guide by any one who may be sufficiently interested to visit the collection. They form but a small portion of the guns which are to be found in Bangkok. Scores, if not hundreds, lie half buried in and around the Grand Palace, their butt ends forming posts on which the chains bounding the paths are hung. There are two pieces outside the Museum and others are to be seen on the West Bank of the river. They must have helped to make history in their day and would doubtless tell many a thrilling tale, if only they could speak. It is in the hope that others, more capable than myself, may be tempted to try to bring to light a little more of the buried past that I have compiled these notes.

Nos. 1 and 5 are a pair (with handles) bearing the arms of the Dutch East India Company—a three masted ship in full sail—and their monogram.



standing for the words
Vereenigde Oostindische Compagnie.

Above the monogram is the letter A, signifying Amsterdam, and on the butt end the date

A N N O 1 6 4 1

In addition they bear in Siamese Characters the respective names

คู่ เมือง ชาติ (84),

"The Night of Java" and

แก้ว มัลยา (83),

"The Gem of Malaya"

followed by the inscription:—

กระสุน ห้า น้ำ ถึง ดิน



which means that the calibre of the weapon was $5\frac{1}{2}$ niw and that the amount of powder required for the charge was 2 chang and 10 tamlung in weight, or $2\frac{1}{2}$ catties.

	(chang)	
This sign		
	(tamlung) (fuang)	(baht) (salung)
		(phai)

was used to denote sums of money under the old currency, and would apply equally well for weights.

Similar signs showing varying amounts according to the dimensions of the weapons are found on most of the other Guns.

No. 6. ດຣະພັດ ຈຳ ພຣ (21) ກະທຸນ ລ້າ ເນັ້ນ ຕິບ ສີ—

"Asuraphat who leads the army"

Calibre 6 niw
Charge 2½ catties.

also has the monogram of the Dutch East India Company, surmounted by the letter R, standing for Rotterdam, together with the date 1628 and the inscription :—

CORNELIUS OVWEROGGE FECIT EN D. I. O. ROTTERDAM.

In connection with this inscription, M. Huber very kindly made inquiries at Batavia, and as a result of these tells me that he has "been informed that Johan and Cornelius Ouderogge (*sic*) were about the year 1700 founders of guns at Rotterdam. From 1704 till 1724 they were master founders at the gunfoundry at The Hague, which was established there in 1665 according to a decree of the States.....of Holland and West Frisia." His correspondent cannot tell the meaning of the letters E N D. I. O. With regard to these a suggestion has reached me from another source (Father Chorin), viz. that EN is sometimes employed for IN and that we should read them :—

IN DEFENSIONEM INDIARUM ORIENTALIUM

Other Guns in the collection bear inscriptions stating the various purposes for which they were severally cast; a circumstance which supports this interpretation.

Johan and Cornelius Ouderogge were probably descendants of Cornelius Ovwerogge carrying on an old established business. The spelling of the family name may have altered somewhat during two or three generations.

There seems to be no record of the acquisition of these Dutch guns or any others in the collection. How they found their way to Siam, then, must be matter for conjecture, and in this connection it is interesting to refer to Jeremias van Vliet's "Description of the Kingdom of Siam", a translation of which by L. F. van Ravenswaay was published in Vol. VII. Part I. of the Journal of the Siam Society. The preface to this work tells us that "in 1602 the Dutch East India Company established a factory in Patani, and the next year Daniel van der Leck, the chief of that station, paid a visit to Siam with the result that in 1604 he sent Cornelius Speex to establish a dépôt at Ayuthia." One of the old Dutch guns now in the Madras Museum bears the date 1602. One wonders whether by any chance it was sent out to Patani, accompanied van der Leck on his Mission to Siam, and was presented by him to the reigning monarch.

Referring to the position of the Nederlands Company in Siam van Vliet says "the company entered into great friendship with the Kings..... Various letters from the illustrious princes of Orange, as Mauritius of Nassouw, his princely grace's brother, Frederic Heindrik of Nassouw, and the noble generals of Nederlands India, have been sent to the Siamese Kings, who in their turn replied to these letters. In this way the friendship was maintained and even strengthened." It was customary for such letters, which were frequently inscribed upon tablets of gold, to be accompanied by gifts,* and it is by no means impossible that these three Dutch Guns in our collection, together with those now in Madras, found their way to Siam in such a manner. On the other hand they may have been purchased from the Company by the Siamese, or have formed part of the armament of the Dutch factory at Ayuthia when it was consumed in the general conflagration of 8th April, 1767. In his recently published paper on the Dutch East India Company's Factory in

* Vide Dutch Papers. Printed by order of the Vajiravudha National Library, Bangkok, 1915.

Siam, a translation of which appeared in the Siam Observer, of July 26 last, Mr. Blankwaardt mentions these very guns and says "they come, without doubt, from Ayuthia, and if not from the factory itself, were presented or sold to Siamese Kings."

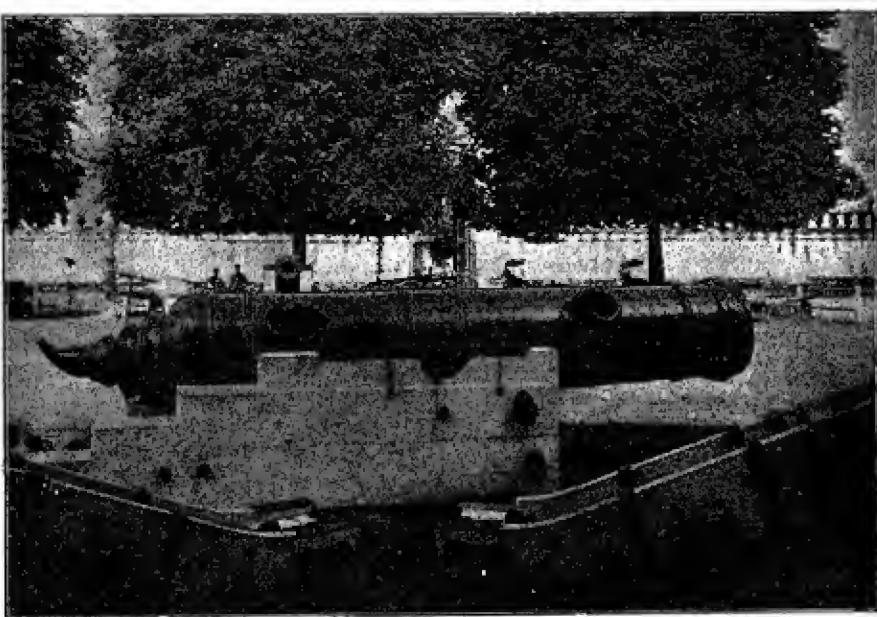
Nos. 2 and 3 belong to a class of gun of which there are ten specimens in the collection, the others being Nos. 24, 33, 35, 37, 46, 48, 50, and 59. They bear the names of various nations and I have accordingly named this "the Nations Class."

ตีบ ๔๐
Calibre 4 niw
Charge 1½ catty.

We have —

No. 2 o x	ລາວ ຕີ່ ປະຕິ	The Lao who plays Polo.
No. 3 o x	ຈາວ ກົດ່າ	The Javanese who performs the kriss dance.
No. 24 o x	ຍັນ ຈຳ ກັງ	The Annamite who wields the spear.
No. 33 o x	ໄກ ໄບຍຸ ເສັນຫະ	The Shan who plays in the forefront.
No. 35 o x	ຂອມ ທ້າ ຕິນ	The Khom who dives into the earth.
No. 37 o x	ຝັກ ວັບເປັນ ແມ່ນ	The fierce Farang, who shoots straight.
No. 46 o x	ຈືນ ສາ ໄກສ	The Chinaman who disembowels.
No. 48 o x	ແມ່ນ ແກ້ງ ກວມ	The Burman who thrusts with the lance.
No. 50 o x	ນັກສັນ ແກ້ກ ຄ່າຍ	The Macassan who destroys the camp.
No. 59 o x	ນົງດີ ກລວງ ຜູ້ນ	The man of Bugis (Mu ngit) who runs amok.

The ceremony of inscribing these guns was held on Saturday the 14th day of the waning moon of the 8th month in the



No. 4 " Narai the Slayer.



Design on No. 8.

year 1156. (A. D. 1794-5) an hour and a half after sunrise. Their calibre is 4 niw.

The guns of this class have a design of fleur-de-lis around the butt and a small human head at the touch-hole, to which I shall refer again. They bear neither date nor name of maker. All are mounted on wheeled carriages and are fitted with a pair of ornamental handles for lifting.

No. 4. o. ນາຮາຍນ໌ ຄັງທະຢູ່ (48) ຕິມ 
"Narai the Slayer" Calibre 13 niw
Charge 37 catties.

A big Gun with the butt end finished in the shape of a curved horn, and no other ornamentation. It has four big rings for lifting. At the muzzle it measures $11\frac{1}{4}$ inches in diameter and the metal is $6\frac{1}{2}$ inches thick. There are two other pieces in the collection which end in the same shaped horn, viz. Nos. 14 and 62.

This Gun and another, ນີລະພັດ ແປ່ງ ກາຍ (No. 62), are said to have been cast during the first reign and to have been given names borne by guns of the Ayuthia period.

No. 7. o. ນີລະພັດ ແປ່ງ ກາຍ (42) ຕິມ 
"Nilaphat who changeth his shape". Calibre 7 niw
Charge 4 catties.
A gun without ornamentation.

No. 8. (Annamite). ປົກກົມ ລົດ ສັກ (20) 
"The Mountain, protector from wild beasts,"
ປົກກົມ ລົດ ຕິມ  Calibre 6 niw
Charge $2\frac{1}{2}$ catties.

It bears in relief a design resembling the collar of an Order. I have not been able to identify it. It bears at the top two head pieces; on the left two trophies of arms, (the centres of which are respectively a plain shield and a dual coronet), and an emblem

resembling a drum ; on the right a breast piece, a shield, a coronet (similar to that on left), and a pan-pipe (?). The collar surrounds an uninscribed shield, depending from which is an intricate knot finished off in two tassels. From a rough sketch I have made a more finished drawing which gives a good idea of the design, but may not be quite correct in every detail.

There is an inscription in Chinese characters round the butt, meaning in Siamese วัน ถูกย ตี เดือน ๕¹ ศก วาร วิชิต ปี ที่ ๑๔ เป็น วัน
หล่อ เป็น หอง เหลือง ไถ วัน ลั้ง เพื่อ ปราบ ปราบ ภาค ตะวันตก

"An auspicious day in the fifth month of the fourteenth year of the period Cánh-hu'ng was the day of the casting of bronze cannon, by order, to subdue the Western country."

This is certainly an Annamite gun. The fourteenth year of Cánh-hu'ng (Annamite pronunciation of the first two Chinese Characters, which Phra Chen of the National Library reads คิง อิง), is 1753 A.D.

Cánh-hu'ng is the name of the period founded by the King of Annam Lê Hien Tôn (A. D. 1740-1786). In 1737 three princes, Lê Duy-Trúc, son of Lê Hi-Tôn (1675-1705), Lê Duy-Qui and Lê Duy-Mát, sons of King Lê Du-Tôn (1705-1729), plotted against the mighty family of the Trinhs, whose members occupied the highest charges and had control of the State. The leader of the family, Trinh-Giang, succeeded in capturing the first two princes and put them to death. Lê Duy-Mát escaped, and, with a certain number of partisans, settled down in the province of Th'anh-Hoa. Later on, in 1740, he had to fly before Trinh-Giang's army : he went further West and took up his residence in the mountainous region of Trap-nish, where he continued to plot against the Trinhs.²

In 1753 — the date on this cannon — Trinh-Dinh, a younger brother of Trinh-Giang, led an expedition against the rebel. This gun is probably one of a number of pieces cast for the purposes of that offensive, which was not altogether a success, for Lê Duy-Mát

¹ The Chinese third month corresponds to the Siamese fifth month.

² Charles B. Maybon, *Histoire Moderne de Pays d'Annam*, Paris 1919, p. 106.

eluded capture. The statement that it was cast to subdue the Western country is in accordance with the facts, for Tran-nish lies west of Tonking, whence Trinh-Dinh set out.

No doubt the gun was used in the campaign for which it was cast and subsequently fell into the hands of the Siamese during one of the wars in Cambodia.

Nos. 8 A. and 16 A. A pair of small guns which were in danger of being overlooked. There is nothing to note about them except that each bears a six petalled flower in relief.

No. 9. อ កចន พระ สูเมรุ (77) ติน ————— Calibre 12 niw
Charge 6 catties.

"Uprooter of Phra Sumeru."

An unornamented gun without inscription, with four fixed handles.

Nos. 10 and 12 (เจ้าพญาสัมมาทบุตร (91) เจ้าพญาธิรักษ์ สารมา (90)
"Follower of the true Faith" and "Lord Protector of the Faith"
each marked

กงสุน อ น๊า ติน หนัก ————— Calibre 7 niw
Charge 4 catties.

A pair of iron guns, inlaid with silver, and mounted on field carriages. They are said to have been cast by order of King Phra Nang Klaow.

According to Prince Damrong certain Chinese artisans came to Bangkok during the third reign and commenced to cast great iron cauldrons. This being brought to the notice of the king, His Majesty conceived the idea that iron guns also might be successfully cast, and established a factory for this purpose. Two types of gun were approved and the pair under consideration are representative of one of those types. Prior to this reign all guns cast in Siam were of bronze.

An old treatise on the casting of cannon (คัมภีร ปิโตร ลงกรณ (คัมภีร) is to be seen exhibited in one of the cases in the National Library. It describes such essential matters as the composition of the metal and the proportions of a weapon, which are illustrated by a diagram. The methods of loading and firing are explained and there are drawings of the rods used for ramming home the charge and for cleaning, as well as a design for a gun mounting. All this infor-

mation, the book states, was furnished by a Dutchman to a Governor of Sokhodhaya.

No. 11. o ສາຍ ອසຸນ ແມ່ງ ລາກີ (37) ຕິມ — Calibre 5 niw
Charge 2 catties.

"Sai Asuni, The Dispeller of Darkness"

bears a circular design enclosing an inscription in Arabic characters. These are but lightly cut and are partially obliterated. Malays who were shown a rubbing could make nothing of it, but a Pathan was more successful and thought he would have been able to translate it, if the rubbing had been more perfect. I greatly regret that I have failed to get this inscription deciphered, as I have an idea it would prove extremely interesting.

No. 12. o ສີເລືອ ກົມ ເມັນ ທະງານ (54) ຕິມ 600 — Charge 2½
catties.

"The fierce leaping Tiger"

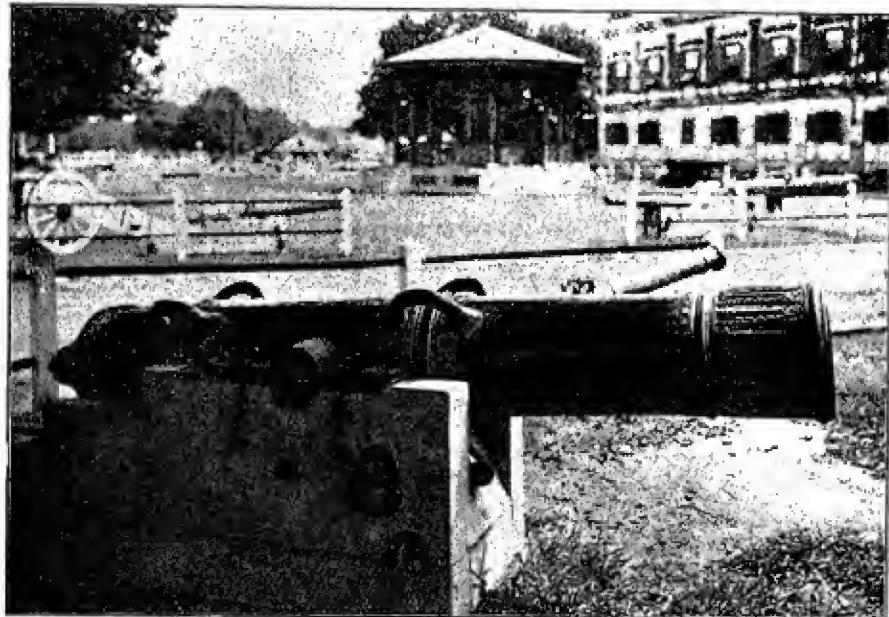
an unornamented Gun with the following inscription roughly engraved :

ເລືອ ກົມ ເມັນ ຖະງານ

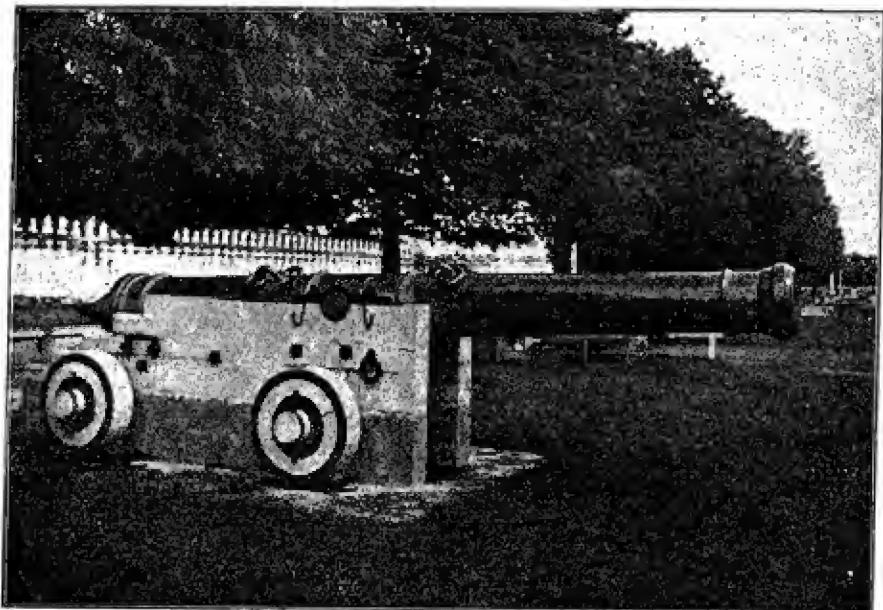
The number : (600) may relate to the proportions of the gun. The word ກົມ (Ku) is possibly the maker's name. This gun and gun No. 3 at Madras may have been made by the same man.

The meaning of the second part of the inscription is obscure. It may be an order that the weapon is to be sunk in the Lake (ບະງານ) — doubtless to avoid capture by the Burmese; but the words ເມັນ ຖະງານ are the same as those used in the book ພຣະ ນາຣາ ປັນ ປັນ ປັນ ປັນ
describing the position of the caged beasts, in which connection they refer to a well-known area of the palace grounds at Ayuthia — the Lake Quarter. Probably, therefore, the inscription denotes that this gun was intended for the defence of that position.*

* The King who succeeded Phra Narai, not wishing to dwell in the palace of his predecessor, built himself a new residence on an island in the lake at the rear of the old palace, thereby making the back the front and the front the back. The foundations of that palace are in existence to-day. The cages of the wild beasts were in its near neighbourhood.



No. 9. "Uprooter of Mt. Phra Sumeru."



No. 14. "Phya Tani."

To face page 15.

No. 14. o များတန် (79)

ပါမ

"Phya Tani"

Calibre 11 niw
Charge 14 catties.

This is another gun with curved horn ornamentation, like No. 4. It has four big rings and is decorated on the axle with the figure of a Rajasi beautifully engraved. It is the biggest in the collection. The diameter of the muzzle is $9\frac{1}{2}$ inches, the metal being 4 inches thick, and its total length is 22 ft. 7 in.

The name Phya Tani is a shortened form of Phya Pattani. A paper by Phya Vijiengiri, published by the Royal Historical Research Society in Part III of the collection of Histories (ประวัติศาสตร์ชาติไทย ที่ ๓) B. E. 2457 and dealing with the history of Pattani, gives an account of the casting there of three great cannon some time in the latter half of the eighteenth century prior to the year 1775. Phya Vijiengiri's narrative is so interesting that I give it. He says:—

"In former days, when the Malay country was still the one State of Pattani, there lived a Sultan and his wife, whose names are not known. It is said that they had but one son, who was still a child when his father died; so his mother acted as regent, being known as Nang Phya Pattani. Sri Tuan, chief of the people in the Pattani territory, was subject to her authority and conducted himself in the same orderly fashion as he had done while her husband was yet alive."

"This lady caused three large bronze cannon to be cast, and the building where the casting took place was on the outskirts of Ban Kasé. It was constructed of brick in the shape of a temple (วัด). Under one roof were three rooms, and a verandah ran round the building. To-day the superstructure and floor are in ruins; only the walls are left standing. The Malays calls the place 'Sabkhet'; and it is still known to all the inhabitants of Pattani as the cannon foundry."

"The chief artificer who cast these guns was a Hokkien Chinaman of the family of Lin, one Khiem by name, who came from China, built himself a house, and married a Malay woman. Moreover he embraced the religious faith of the Malays and was known to them as Lim Toh Khiem. After residing in Pattani for many years he was visited by his sister Kao Niew, who urged him to return to China but was met by a firm refusal. She was so disappointed that she hanged herself."

"The first two guns were successfully cast, but in the case of the third the molten metal refused to flow into the mould. Lim Toh Khiem therupon offered up sacrifices, but still the metal did not flow. Finally he made a vow that if at the next attempt the casting were successful, he would sacrifice his own life to the gun. The third attempt was a complete success, and after the final polish had been given to all three guns and he himself had fired the testing charges of the first two with all due ceremony, he took his stand before the mouth of the third, and, after relating the nature of his vow and stating his determination to abide by it, gave orders for it to be fired and, this being done, was seen no more."

"The name of the first gun was 'Nang Pattani' (ນັງ ປັຕະນີ), of the second 'Sri Nakhri' (ສະໜີ ນັກີ), and of the third 'Maha Hla Hlo' (ມາຫາລາຫລວດ) ".

"At the death of Phya Pattani's widow a relative became Sultan, whom the Malays called Ratu Pakalan. He was known as a wise and powerful ruler and was feared by his neighbours. During the reign of King Phra Buddha Yot Fa, in the year Chulasakaraj 1147 (A. D. 1785-1786), Krom Phra Rajawangbuan Satan Mongkhon (the second King) led an expedition against the Burmese as far as the western province (ເມືອງ ເຟັ້ນ ດັກ). On the arrival of this force at Songkhla news was received of a disturbance in Pattani. Measures for its suppression were immediately taken. Phya Kalahom, Phya Senhabhuthorn, Phya Patalung, Luang Suvarngiri and Palat Jana were in command of columns. The forces of Ratu Pakalan, encountered in the neighbourhood of Jering, broke and fled.

in the direction of Rainan. Phya Kalahom ordered Palat Jana, who was acquainted with the route, to pursue them with a force composed of men from Patalung and Songkhla. Palat Jana overtook the fugitives on the borders of Perak, where another engagement was fought in which Ratu Pakalan was slain by a musket ball. His head was brought back by the column commanders to Krom Phra Rajawangbuam Satan Mongkhol, who had meanwhile brought his fleet into the Bay of Pattani. He ordered them to bring two large cannon which had been captured, and place them on boats for removal to the capital and presentation to the King. This was done; but the vessel carrying the second of the two, named 'Srinakri,' foundered in a gale and the gun was lost. The first, named 'Nang Pattani,' which had been placed on board the Royal vessel, reached the capital in safety." It is the Phya Tani of this collection.

Such is Phya Vichien's account of the campaign in which this gun was captured, but H. R. H. Prince Damrong tells me that the correct version is as follows:—

In the third year of the first King of the present dynasty the Burmese again invaded Siam by three routes, North, West, and South. The King of Siam, abandoning the South for the moment and despatching a small detaining force to Paknampo, concentrated the bulk of his available forces against the King of Burma, who had entered the country via Kanburi, and gained a complete victory over him in the battle of Lat Ya. The King of Burma then retired; and the King of Siam thereupon divided his forces, himself advancing to meet the invaders coming from the North, while his brother opposed those advancing from the south. Both were successful. The Malay States of Kedah and Pattani, which had resumed their independence after the fall of Ayuthia, were then summoned to renew their payment of tribute. Pattani refused and was therefore attacked and subdued. Kedah, seeing her neighbour's plight, submitted; and Trengganu, of which Kelantan was then a part, voluntarily accepted Siam's suzerainty and sent tribute for the first time.

No. 15. นาเรียน กัลป์ จักร์ กระสุน ห้า น้ำ กิน ตัน
 " Naryan (Rama) swallower of Calibre 5 nw.
 the Chakra" (Earth). Charge 2 catties.

No. 16. ตะนิกาย กะสน สาม น้ำ กิ่ง กิน ติน
"Tanikai"



Calibre 3½ niw
Charge 1½ catties.

bears the Siamese inscription ไทย มาก and is a relic of Ayuthia. These two are noticeable for their ornamentation and the curious octagonal shape of their barrels.

No. 16 A. A pair with 8 A.

No. 17. Another European gun, one of a class of which there are eight pieces in the collection, the others being Nos. 18, 25, 32, 38, 41, 51 and 58. Each bears the inscription:—

A DOUAY PAR J. BERENGER,
its name, and the date of its casting.

The earliest piece is LE CAMELEON, No. 41, dated
24. 7 BRE. 1767

No. 17 is next in order: it is named

LE DUC DE ROCHEFOUCAULD and dated
21. MAY. 1768

No. 18. LE LIONCEAU

2. JUILLET. 1768

The five other guns of this class all bear the same name and date, viz.,

LE SANGUINAIRE
12. 9 BRE. 1768

The last two, Nos. 51 and 58, have the number 12 on the butt end. In addition to an ornate design surmounted by a crown these guns have a decorative design of fleur-de-lis around the butt, a small human head at the touch-hole and two handles apiece; all identical with those which adorn the guns of the Nations class. This cannot be due to accident, and there must therefore be some connection between the two classes. Either they were both made at the same foundry in Douai, or else the Nations class was copied here in Siam from the Berenger type. It appears to have been the practice of European gun founders to place their names or marks upon their

weapons, but if the Nations class was made after an existing pattern to the order of the Siamese Government, the absence of such marks would be perfectly intelligible. Again, if the guns were made in Siam after the Berenger model, French names and inscriptions would certainly have been omitted. For these reasons I believe that the date of the Berenger guns is slightly anterior to that of the Nations class. That date is significant. Ayuthia fell in April 1767. We have here a gun, the first of a class, cast only seven months later, and possibly not originally intended for Siam. What is more likely than that the purchase of artillery was among the first steps taken by the Dhonburi Government to free the country from the lingering Burmese, and to defend the new Capital? It would be interesting to learn whether anything is known in Douai to-day of the gun founder J. Berenger, and whether any documents relating to these weapons are in existence either in Siam or France.

No. 19. o ၁၃၂၈၁၆၁၉၁၅ (47) ပြု ၄ ကတ္တနာရီ
 "Conqueror of three worlds."

G

Calibre 7 niw
Charge 4 catties

a perfectly plain gun. The axle bears a conventional lotus pattern which is also to be seen on Nos. 7 and 9.

No. 20. oz ၁၃၂၈၁၆၁၇၁၅ (32) "The flame that lightens the darkness."

No. 21. o§ ၀၁၂၈၁၇၁၆၁၅ (27) "Ongkhot who leaps and smites."

No. 22. o‡ ၀၁၂၈၁၇၁၅ (33) "The Earth Shaker."

G

each marked

ပြု

Calibre 5 niw
Charge 2 catties.

The first three of an interesting class comprising eleven pieces, the others being Nos. 33, 34, 43, 44, 49, 60, 61 and 63. These guns are highly ornamented and have at the butt end a design which seems to be intended to represent the sun shining through clouds—one singularly appropriate to the date of casting, for the first King

of the present dynasty had been on the throne for 10 years, and the country had in large measure recovered from the disasters of the Burmese invasion. Each piece bears the inscription:

L. BANCHONG ROTCHANA ANNO 1792 5 LIVRO

'Luang Banchong Rotchana' is a Siamese title conferred upon one of the King's draughtsmen. It is curious that a Siamese nobleman should cause his name to be inscribed in Roman characters, and this fact inclines me to the belief that the founder of these guns was a European. Prince Damrong concurs in this view. Who then was this man? In the absence of any evidence I would hazard the guess that he was the head of the firm of Berenger. The Luang Banchong guns bear a strong resemblance to those of the Berenger class and may well have come from the same foundry. By supplying the Siamese with artillery at a critical period in their history the Douai firm did the Government a good service and there would be nothing unusual in the sovereign conferring a title of nobility upon the head of the firm as a mark of appreciation. Mon. J. Berenger and Luang Banchong Rotchana may well be one and the same person. The closeness of the dates—1768 and 1793—would warrant this supposition. The guns of the Nations class were very possibly cast between those two years. The title 'Luang Banchong Rotchana' occurs in an old Treatise on the casting of Buddhas, printed last year, in a metrical list of revered teachers of the art who lived before or during the 3rd reign of the present dynasty. The bearer of the title was one Sa (沙) by name and it may be that he was the founder of the guns of this class: but, if so, why did he inscribe his weapons with Roman characters?

No. 23. ไหว อภินพ กะสัน ณ น้ำ ดิน หนัก +
 "Shaker of the Ocean" Calibre 8 niw
 Charge 8 catties.

Not mentioned in the list of royal names or in the old MS.

No. 24. o. x. ยาน จា งก้า (9) ติน ๑๐ Charge 1½ catties.
"The Abnamite who wields the spear."

No. 25. ພົມມາສ ປຳກັນ ມາກ (14)

"Rama's arrow that slew the giant."

Calibre 6 niw
Charge 2½ catties.

By Berenger vid: No. 17.

This gun belonged to the Wang Luang—the first King's palace.

Nos. 26 and 31. A pair of small guns bearing the device:—

Three Siamese Royal Umbrellas, and the letters and date

S. P. B. P. M. M.

1 8 6 2 .

The letters stand for the words "Somdet Phra Baramindr Phra Maha Mongkut." They were made in Europe to the order of King Mongkut.

No. 27. ໄຍ ຮາພ ພົດ ກາ (26) ກວະສຸນ & ນຶ້ງ ຕິນ

"Waiyarab who smashes the Royal carriage." Calibre 5 niw
Charge 2½ catties.
and

No. 28. ນີລານອ ແພ ເຮນ (22) ກວະສຸນ & ນຶ້ງ ຕິນ

"Nilanon who thrusts with a spear" Calibre 6 niw
Charge 2½ catties.

These two guns bear identical inscriptions in Chinese, which mean in Siamese,

ຫດອ ຢັນ ຂັນ ດັກ ດີເອນ ๑๐ ປີ ຈະ ສັກ

The Chinese tenth month corresponds to the Siamese twelfth month (ເດືອນຕັ້ງ), so the inscription may be rendered into English:—
"Cast on the eleventh day of the waxing moon of the month of November in the year of the dog, the 7th of the decade."

Unfortunately the year cannot be reckoned with certainty for want of the name of the day of the week. It is probably A.D. 1839 (Chulasakaraj 1200). They are almost certainly Annamite weapons and trophies of war. A conventional lotus design ornaments the touch hole.

No. 29. o (Siamese) ພຣະ ພິຈູນ ແລະນ ທ່າ (63) Calibre 19 niw.

"A Hundred thousand measures of rain."

(Phra Phirun is the Rain God).

A large and highly ornamented gun with rajasi on axle and four rings. A pair with No. 55.

The name of this gun recalls that of the famous weapon which Constantine Phaulcon succeeded in weighing, to the discomfiture of the wise men of his day. The story, which is related in the Annals of Ayuthia is as follows:—

"King Phra Narai was one day minded to give to his courtiers an exhibition of the cleverness of Chao Phya Wichayen (Constantine Phaulcon); so he commanded them to bring forth the great gun named Phra Phirun and weigh it, that he might know how many 'hap' it weighed. Then all the nobles took counsel together how they might fulfil the King's command; and they made mighty scales with iron chains and attempted to weigh the gun with these, but could not. So being at their wits end they drew near and prostrated themselves, and confessed that they were unable to weigh it."

"Then the King summoned Chao Phya Wichayen and bade him weigh the gun, that he might know the weight thereof. So Chao Phya Wichayen went out; and having taken counsel within himself how he might do this thing, he caused several barges (rua nang pet) to be brought to the river landing, and having chosen one he had the gun placed therein, and marked how deep she lay in water. Then he bade them take out the gun and bring broken bricks and stones, and weigh them, and load the barge with them, until she sank to the line he had marked. Then knew he the weight of the gun. So he went and told the King, who praised the cleverness of Chao Phya Wichayen and promoted him above all the other nobles."

When the fall of Ayuthia was imminent, that gun was cast into the waters of the lake in the Palace precincts in the hope that it might elude capture. The Burmese, however, would seem to have discovered its whereabouts, for it is said that they conveyed it to

Wat Khema and there blew it up, taking the remains away with them.

The present Phra Phirun was cast by Phya Tak Sin's command to be an emblem that the kingdom had recovered from its reverse and had regained its former greatness. The casting took place in the Suan Mongkhut (Mangosteen garden), the site of the present Wang Lang Hospital, on Friday the 1st day of the waxing moon of the 4th month in the year 1139 (A. D. 1777).*

No. 30. เสือ พน อาทัย กะรุณ ๔ นิ้ว กิน ติน 
 "The Tiger that endureth hunger." Calibre 8 niw
 Charge 2 catties.

This gun bears the inscription ไหง ชัย and therefore belonged to the King's guard in the days of Ayuthia.

Its name is not included in the List of Royal Names, nor in the MS.

No. 31. A pair with No. 26 (q. v.).

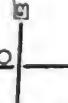
No. 32. o. II. ลม ปังไถย กัต้ม (16) 
 "The Wind that destroyeth the Earth." Calibre 6 niw
 Charge 2½ catties.
 L E S A N G U I N A I R E
 by Berenger vid: No. 17

It belonged to the Wang Luang—the first King's Palace.

No. 33. o. x. ไห ไหง เล่น หน้า (3) ติน 
 "The Shan who plays in the fore front." Calibre 4 niw
 Charge 2½ catties.
 One of the Nations Class.

No. 34. o. ผี ศาด เสือหก จีก กิน (30) ติน 
 "The Demon that rends and devours." Calibre 5 niw
 Charge 2 catties.
 by Luang Banchong, vid: No. 22.

* Vol. 2 History of Siam from the reign of Phya Tak Sin, appendix to the Annals of Ayuthia.

No. 35. o. x. ខែន តា ពិន (1) ពិន 

"The Khom who dives into the Earth." Calibre 4 niw
Charge 2½ catties.

I am told that this is the nickname of the famous Khom general, Okya Decho (ឧក្រ យា ទេចូ) who was able to inflict severe injuries on his enemies by the secrecy and rapidity of his movements. No matter what precautions they might take, they never were aware of his presence until too late; and he disappeared from one place and reappeared in another with such facility that he was given this name.

No. 36. o. z. ព្រះីសុន ប្រាប់ ជ័ររាប (59) ពិន 

"Phra Isuen, conqueror of the Universe." Calibre 8 niw
Charge 8 catties.

A large plain gun with the design at the touch-hole similar to that of the Nations Class, and a figure resembling a Harpy on the axle.

No. 37. o. x. អង់រាយ បីន មេន (7) ពិន 

"The fierce Farang who shoots straight." Calibre 4 niw
Charge 2½ catties.
vid: No. 2. Nations Class.

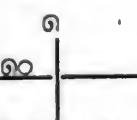
No. 38. o. II. គុន ព្យាន ແណោ តុហិ (49) Calibre 6 niw
Charge 2½ catties.

"Khon Tarn who exhibiteth power."

Another Berenger Gun. vid: No. 17.

It belonged to the Wang Na, the second King's palace.

This name does not appear in the list of Royal names, which however contains one rather similar នូន កុពាស ແណោ តុហិ (49).

Nos. 39. ឯកអិរុត ករសុន ដ នីក ពិន 

and "Akhanirut." Calibre 4½ niw

40. (No name) Charge 1½ catties.

A pair of European guns each bearing two coats of arms. The first of these is barry of six horizontally, with supporters, an angel's wings. Above it is a coronet with five leaves, and this again is surmounted by an eight pointed star.

The second coat of arms is that of the Kingdom of Leon and Castile (Spain), which at first sight seems to prove that the weapons are of Spanish origin.*

I have been unable to identify the first coat. Sir Hercules Reed of the British Museum very kindly instituted inquiries at Madrid, but without success.

Above the arms No. 39 has the inscription

B E R N A D I N O D. E. A N. D. 1624.

and between them the name S. M A I E O

No. 40 has a fuller inscription

A L E X O D E T E X E D A 1 6 2 5

and the name S. M I C V E L

The cyphers after the name BERNADINO on the earlier of the two guns must be an abbreviation for DE TEXEDA. The makers were doubtless near relations, father and son, or possibly brothers.

The year 1624 was the forty-third of the sixty years captivity of Portugal, Philip II of Spain having been crowned King of Portugal in 1581. It is just possible, therefore, that these Guns may be of Portuguese origin, although they bear the arms of Spain. When they were cast Philip the IV. was on the throne, having succeeded his father in 1621 at the age of sixteen.

It must have been a time of considerable activity in the arsenals of Spain, for the 30 years' war had commenced in 1618 and it would seem probable that the two cannon S. Maieo and S. Miguel were originally intended for use against the forces of the Protestants.

* Spanish pieces of eight bearing the arms of Spain and inscriptions
Ferdinand VI, 1791.
Carolus III, 1795.
were recently found in the Malay Peninsula by Mr. R. Adey Moore.

The relations of the Spaniards with this part of the world are, I believe, somewhat obscure.

No. 41. ຂະນະ ໂມຍາ (88) ດ້ວຍສຸມ ລັດ ຕິດ

GO

"Conqueror of Hongsa."

Calibre 6 niw
Charge 2½ catties.

LE (CAMELEON,) by Berenger, vid: No. 17.

The Siamese name suggests that this gun was cast to take part in a victorious campaign against the Burmese. Phya Chakkri invaded Tenasserim and made himself master of Tavoy in 1792. As this gun is dated 24th September 1767 it probably accompanied his forces. The name may have been conferred after the event.

Nos. 42 and 45. A pair of British guns each bearing two heraldic devices:

(1). On the fore part of the gun, an earl's coronet surmounting a ribbon in which is inscribed the motto

PROVIDENTIAE MEMOR.

Enclosed within the ribbon is a crest, three arrows in pale. Depending from the ribbon is the Star of the Royal Guelphic Order of Hanover. The motto is that of the Order of the Rue Crown of Saxony.

(2) On the after end of the gun, an earl's coronet, below which appear the arms, with supporters and motto, VIRTUTI NON ARMIS FIDO, of the Earl of Wilton.

Reference to an old copy of Burke shows that Thomas Grosvenor, born 1799, second son of Robert, 1st Marquis of Westminster, succeeded to the Earldom and Viscountcy of Wilton through his maternal grand-father, Sir Thomas Egerton (died 1814), whose surname and arms he assumed in 1821. He was a Knight Grand Cross of the Guelphic Order of Hanover (G. C. H.) and a Knight of the Order of the Rue Crown of Saxony.

Without doubt these two guns were connected in some way with that nobleman and were cast in the first part of the 19th century. I have not been able to discover how they found their way to Siam. Inquiries addressed to the present Earl have, as yet,

met with no response, but as the second Earl was Commodore of the Royal Yacht Squadron, it is not impossible that he visited this country in his yacht and presented them to the reigning monarch. Another English nobleman, the Duke of Sutherland, came here in the R. Y. S. "Sans Peur" in 1888 and an account of that visit is given by Mrs. Florence Caddy in her book "To Siam and Malaya" published by Hurst and Blackett in 1889. She speaks of the armament of the vessel and mentions "three shining revolvers at the head of each sofa (in the deckhouse) ". . . . a frieze of nine Winchester rifles, which fire 15 charges each without reloading, and a magazine of ammunition in a cupboard handy by. All this, with the brass cannon on the deck, is for defence against possible pirates in the China Seas." If the seas were so unsafe in the late eighties, a vessel of similar type visiting these waters half a century or so earlier would undoubtedly have mounted some useful guns.

Another, and perhaps more probable, explanation of the presence in Siam of these British Guns is to be found in the History of the third reign of the present dynasty (พม่าฯ รัชกาลที่ ๓) where it is on record that at the conclusion of the first Burmese war the British presented two bronze cannon (ปืนใหญ่ อย่าง บรรจุน ห้อง), calibre 5 niw, to the King in return for assistance rendered by the Siamese.

No. 43. o. II. ไฟ นา กด (34) ติน

"Fire, the great Destroyer".

and



Calibre 5 niv
Charge 2 catties

No. 44. o. ๖. ๑๕๔๙ ตั้น หัก กอก ๑๔๗ (28)

"Plong Tan (the hunter) who breaks the Tiger's neck."

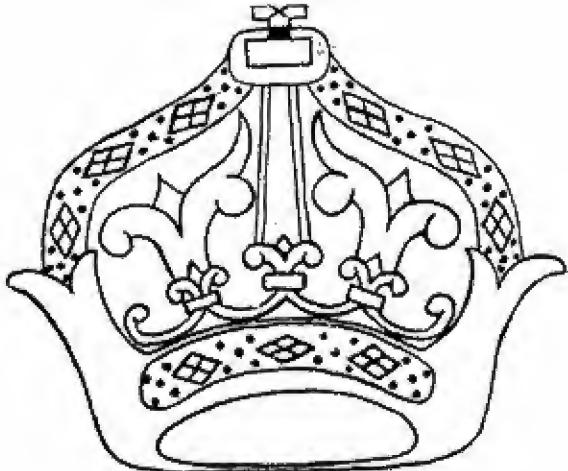
A pair by Luang Banchong, vid: No. 20

No. 45. A pair with No. 42.

- No. 46. o. x. จัน สาม ไส้
 "The Chinaman who disembowels."
 vid: No. 2, Nations class.
- No. 47. o. z. ພະ ກໍາສ ພົມາງ ໄດກຍ່ (60) ຕິບ —————
 "Phra Kan, destroyer of the Earth." Calibre 8 niw
 Charge 8 catties.
 A large Siamese gun: a pair with No. 36. (q.v.)
- No. 48. o. x. ญมນ ແພນ ກວມ (8)
 "The Burman who thrusts with the Lance".
 vid: No. 2, Nations Class
- No. 49. o. ♀ ຕິປີ ນາຮຍັນ (36) ຕິບ —————
 "The Arrow of Narayan."
 by Luang Banchong. Vid: No. 20.
- No. 50. o. x. ນັກ ສົມ ແຫກ ສາຍ (6)
 "The Macassar who Destroys the Camp."
 Nations class vid: No. 2.
- A large colony of Macassars were settled in Siam at the end of the seventeenth century. Those at Ayuthia made insurrection on 14th September 1686 and, but for the disclosure of their conspiracy a few hours before the rising was timed to begin, might have succeeded in gaining possession of the country. It seems that they were expecting assistance from their compatriots abroad, for a fleet of forty Malay vessels was sighted off the bar about the time of the rising. The suppression of this was a bloody affair. Their habitations were fired, and women and children perished in the flames. All who survived were made prisoners.

The district of Bangkok known as "Maccasan" takes its name from these people.

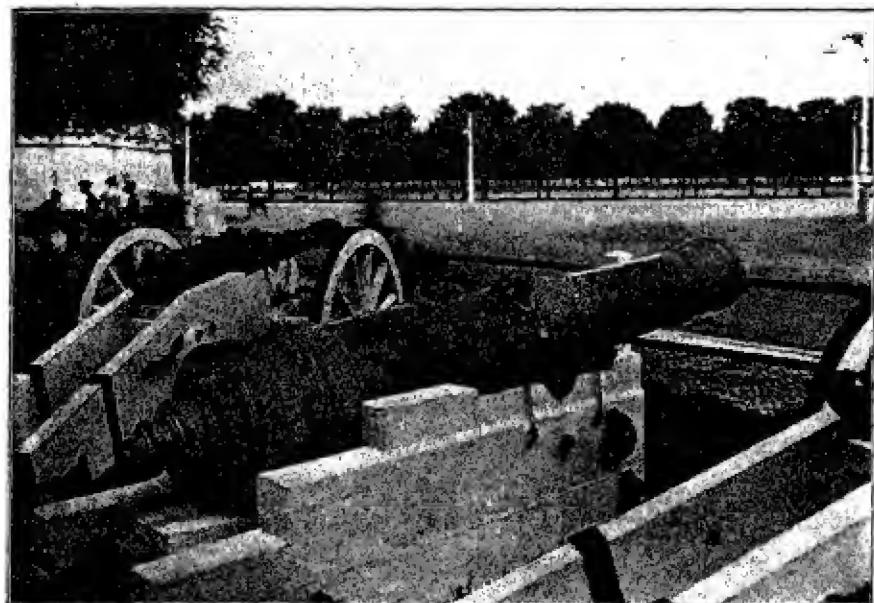
A full account of the insurrection is given in John Anderson's "English intercourse with Siam in the seventeenth century."



R. EEREI {•} ECRAS°

DE COCH CHINA
CHAMPAE CAMBOIAOAO
DACPVSÆ ESEN 1670

Crown and inscription on No. 54.



No. 47 " Phra Kan, Destroyer of the Earth."

No. 51. ป้าปัน อังวา (87) กะสุน ๖ หน้า ต้น ——————
"Subduer of Angwa."

LE SANGUINAIRE

by Börenger vid: No. 17.

This gun also was probably with Phya Chakkri on his expedition against Burma in 1792.

Nos. 52 and 57. a pair of small cannon bearing in relief
a crown and the date
1860.

No. 53. แม่การไจ กัลฟ้า (85) กะรัสนุ ท้า น้ำ ดิน —————
 "The brave Dragon." Calibre 5 n.w.
 and Charge 2 catties.

No. 54. เหง้า ใจ ร้าย (86)
"The fierce Crocodile."

are a pair bearing a crown and two inscriptions, one in Chinese characters, the other in Portuguese, which latter establishes the fact that the weapons were made in Indo-China in the year 1667 and 1670 respectively by one Loão da Crus.

A sketch of the design of the crown and a copy of the Portuguese inscription were sent by Professor Coedès to the Rev. Father Cadière at Hué, who sent in reply some very interesting notes, of which I give a translation.

The first of these is an extract from a memoir written in 1747, probably by M. de Véthomme, in connection with the visit of Monseigneur de Coricéé, and preserved in the archives of the Foreign Missions in Paris. This memoir exists in duplicate in the archives of the Jesuit Printing Press in Hongkong, from whence comes the copy in Father Cadière's possession. The extract, which throws some light upon the identity of Ioão da Crus, the founder of these two Guus, runs as follows:—

"It is useless to object that the Jesuits had a residence there (at Thô-Dôc) before the French. As a matter of fact this is what

happened :—A Portuguese or Spanish half-breed, a founder of cannons, came and offered his services to the King; the offer was accepted and he was installed at Thô-Dúc where all the gun founders were accustomed to live. This Catholic half-breed persuaded the King that he had need of a Priest of his own religion to help him by his prayers to success in his work. The King sent to him a Jesuit, who lived for some time in the house of a Christian woman, and died and was buried in the garden of the gun founder. Are we to conclude from this circumstance that the Jesuits had a residence at Thô-Dúc this being the only one of them who, up to that date, had lived in that village, and he, not in his own residence, but in the house of a stranger ?"

"It is true that the persecution being somewhat abated, the Jesuits obtained the positions of Mathematicians to the King: then this prince assigned to them for their abode a garden in the village wherein this Father built a house but did not dwell long on account of thieves."

The second note is by one Father Renault who died in 1898. He copied the memoir at Hongkong. This priest played an important part at Hué in the events of 1885 and knew the citadel perfectly. It runs thus :—

"From other documents (seen by Father Renault in the archives of the Foreign Missions at Hongkong) he (the half-breed) was called 'Jean de la Croix'. This name was to be seen in the Portuguese inscriptions upon numerous pieces of cannon which were broken up and sold by the French in 1888, 1889 and 1890, bearing dates of 1600 odd."

"I believe I have myself seen, may be in a document, perhaps upon a piece of artillery, the signature of this founder spelt thus :—

'Ioao da + ?'

The third note concerns the date. It is an extract from a memoir presented to Cardinal de Bernis on the 29th July, 1770, by M. Boiret, on the occasion of the visit of Monseigneur de Coricée. (This memoir is preserved in Paris in the archives of the Foreign Missions, and in duplicate at the Printing Press of the Society at Hongkong, whence comes the unregistered copy of Father Cadière.)

"In the year 1664 M. de Bérythe, Vicar Apostolic of Cochin China, sent thither M. Louis Chevreuil in the capacity of Vicar General. This missionary arrived there on the 26th July of the same year and found there three Portuguese Jesuit Fathers... Two of these Jesuits were at Fai Foo....., the third was at the Court as chaplain of the founder of the King's cannon, called Jean de la Croix, a Portuguese from India..... (M. Chevreuil) was then obliged to abandon everything, to take to flight, and to go and request from this Jean de la Croix an asylum which he did not deign to grant him."

"In 1664, then, Jean de la Croix was at Hué, in Thô-Dâc."

This brings us very near to the date of the earlier of the two cannon, 1667.

The name of the Place.

"In the 17th and 18th centuries the town of Hué and the surrounding country were called by the old administrative name of the province, Thuần Hoá, and this name was spelt by the Portuguese and Dutch SENUOA, SENUA, SENOA, SINGOA. We can perhaps recognise the first part of this name in in the letters SEN which precede the date 1670. We should then have after the name of the Kingdom and that of the maker, and before the date, the name of the town where the cannon was cast, Hué."

"Only the letters AE E remain unexplained, for the word E C R A S° would probably be a Portuguese word meaning L'accroissement"—the expansion. The whole inscription then would mean :—

FOR THE KING AND THE EXPANSION OF COCHIN CHINA,
CHAMPA, AND CAMBOJA, BY IOÃO DA CRUS AT HUE,
1670.

The Chinese inscription, translated into Siamese reads

ปี 辛酉 เมือง จอกศักดิ์ พระบรมราชูปถัมภ์ ไป ปฐา ป่า ไช ตี รุบ รุน วอน ณ

"In the year of the horse, the first of the cycle, His Majesty led an army to subdue the Southern region with whom were joined the Flags."

The events to which the inscription in Chinese characters alludes are probably the revolt of the Tây-són, and the date should be read 1774 A.D.

"The Tây-són family was called after the village of Tây-són in the province of Bình-Dinh, where their ancestors were established. The revolt was started by Nguên-van-Nhắc, who, after gathering pirates and deserters, was strong enough to take in 1773 the citadel of Qui-Nho'n. A first expedition, sent by the court of Hué, was routed. This success induced a considerable number of Chinese pirates (probably the 舟, i.e. "Flags," of the inscription) under the leadership of two Chinese, Táp Dinh and Li Tai, to join Nguyễn-van-Nhắc, and during the latter part of 1773, the rebels occupied the Southern portion of Annam, from Quang-Ngai to Phanrang."

"During the last months of 1774, the court of Hué sent fresh troops against them; under the command of Prince Nghiêm. Prince Nghiêm being recalled to Hué to face an invasion of Tonkinese (who took the capital during the first months of 1775), Nguyễn-cu'u-Dát took the command, but was finally defeated in April 1775."*

That expedition of 1774 directed by a prince against rebels in the South seems to agree with all the terms of the inscription.

John Crawford describing his visit to the arsenal at Hué in September 1822 says:—"the art of casting good brass cannon, under the direction of Europeans, appears to have been long known in this part of the world, for among the cannon in the arsenal were a good number of very well founded ordnance, apparently of the size of long nine-pounders, as old as the years 1664 and 1665. These had inscriptions in the Portuguese language importing that they were cast in Cochin China or Kamboja, and bearing the dates in question with the name of the artist. Although very inferior indeed to those recently cast under the direction of the French, still they were very good specimens of workmanship."

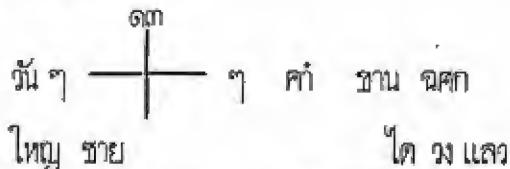
* Histoire Moderne du Pays d'Annam par Charles B. Maybon, p. 185.

No. 55. o ໜຶືກ ພະຈຸນາ ພາຍ (46) Calibre 18 niw
"Upsetter of the Earth."

This is a twin brother of Plua Phirun. Vide No. 29.

No. 56. o ອິນທີ ກົດິນ ຂ້ານ (38) ຕິນ —————
"The Eagle that swalloweth the Elephant." Calibre 6 niw?
Charge 2 catties

Another large Siamese weapon. It is without ornamentation and bears the inscriptions:—



which signify that the gun belonged to the left wing of the Main Guard of the Tamruet, mentioning a date,—the 13th day of the waxing moon in the year of the Tiger, the sixth of the decade—but unfortunately failing to record the month. It also seems to be stated that a circle* has been described: by whom or of what nature is not recorded.

The date referred to may be in A.D. 1794 (Chulasakaraj 1156)

No. 58. o. j. ນຳທາ ຈັກ ກາຕ (19) ຕິນ —————
"The biting Chakra".

LE SANGUINAIRE

by Berenger, vid. No. 17. It belonged to the Wang Na.

No. 59. o. x. ມູງຕາ ທອງ ພິນ (5) ຕິນ —————
"The Man of Bugis who runs amok".

Nations Class vid. No. 2.

The Bugis (or Bughis) are "a people of Malayan stock, originally occupying the Kingdom of Boni in the south-western peninsula

* (cf. Gun No. 1. at Madras, p. 2).

of the island of Celebes. From this district they spread over the whole island and founded settlements throughout the whole Malay Archipelago. In disposition they are brave, haughty and fierce, and are said to be more predisposed towards 'running amuck' than any other Malayans". (Encyclopedia Britannica). The name of the gun exactly fits this description. In the Siam Repository, 1869, on p. 58 it is recorded that a colony of Bugis under Dain Mangali settled in Siam in the middle of the seventeenth century.

No. 60. o. ນ່ຳ ກະບົດ (35) ຕິນ 

"The Giant of Krabin".

By Luang Banchong.

vid. No. 20.

No. 61. o. ຜູ້ເສື່ອ ສູນ ເລື້ອຕາ (29) ຕິນ 

"The Vampire who sucks blood".

By Luang Banchong.

vid. No. 20.

No. 62. o ມາ ປັບໄສຍ (46). ຕິນ 

"The destroying Giant."

Calibre 8 niw

Charge 8 catties.

This gun and No. 4 are named after guns of the Ayuthia period. No. 62 is highly ornamented and ends in a horn. The touch-hole is furnished with a hinged cover and there are four large rings for lifting. Its total length is 201 in. This gun and No. 4, were cast, so I have been told, in the first reign.

No. 63. o ພຣະ ອິນທີ ຄວັງ ຈັກ ແກ້ (31) ຕິນ 

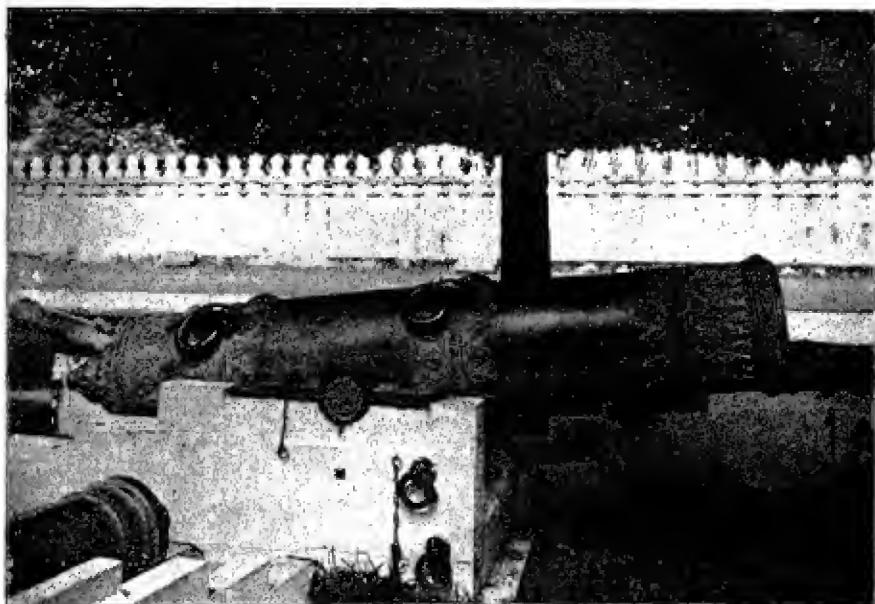
"Phra In, who hurls the crystal chakra." Calibre 5 niw

Charge 2 catties.

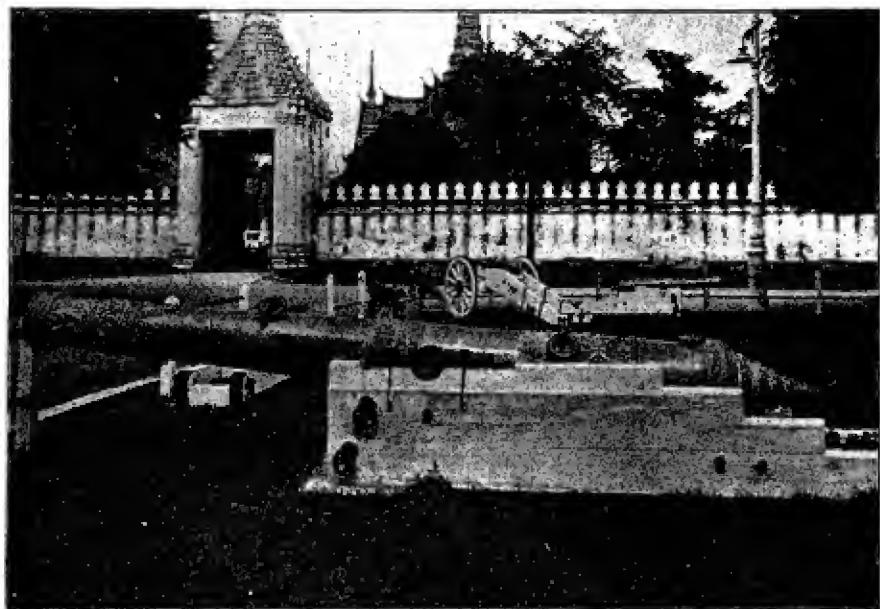
by Luang Banchong. vid. No. 20.

GUN MOUNTINGS.

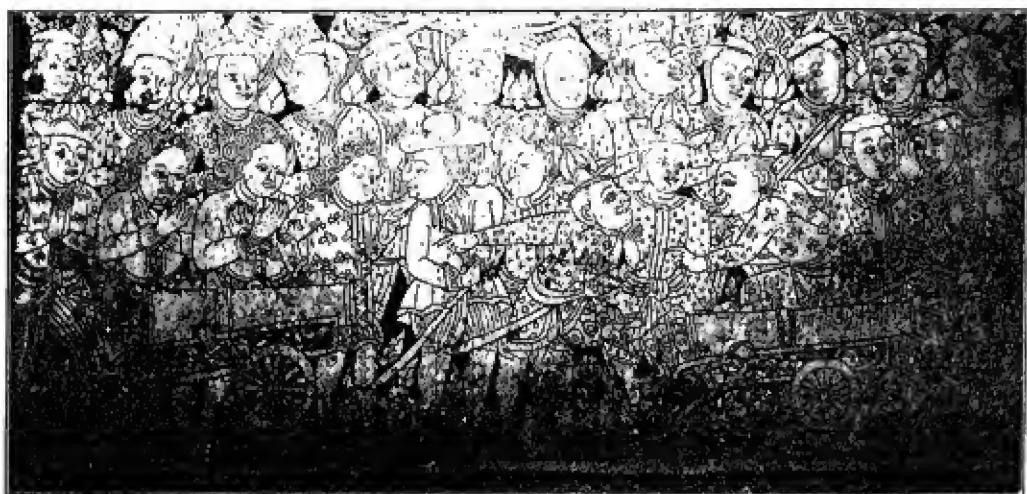
Of the foregoing weapons only those of the Nations class and the two silver inlaid pieces (Nos. 10 and 12) are mounted on



No. 55. "Uprooter of the Earth."



No. 62. "The Destroying Giant."



Gun carriages of
(From a book-case in



Artillery
(From a book-case



the Ayutthia period.
the Vajirañana Library.)



in Action.
in the Vajirañana Library.)



carriages of a modern pattern. The remainder are supported upon wooden truck-carriages with or without wheels. It is possible, however, to have some idea of what their old mountings were like. A certain book-case in the National Library has a design in black and gold representing the four arms of the army of ancient days, horse, elephants, chariots, and foot. With the last are portrayed several pieces of artillery, very closely resembling certain of the guns in the collection (Nos. 9, 36 & 55), a circumstance which should satisfy any sceptic that the drawing of the carriages is correct.

Another book-case in the same building gives a very spirited representation of artillery in action, and illustrates the method in vogue of securing the required elevation by means of a timber tripod and trestle.

In compiling these notes there has been little to go upon but the evidence afforded by the weapons themselves. No record concerning them was forthcoming until quite recently when I was shown the old MS. already mentioned. This records the dates of ceremonies held in connection with certain of the guns, but not the dates of casting. I think, however, that we may take it for granted that, where not otherwise determined, practically all those mentioned in that document were cast by command of Phya Tak Sin or his successor.

There are several European pieces for whose presence in Siam one would like to be able to account. Many a ship's captain bartered a portion of his armament in the old days, but there are certain weapons in the collection bearing royal or noble coats-of-arms and one with an inscription in Arabic characters (No. 11) which one suspects found their way here in other fashion.

The EARLY USE OF FIRE-ARMS IN SIAM.

Before concluding my paper I should like to say a few words about the early use of fire-arms in Siam. The subject has been dealt with in a book entitled "The Art of War, Military Organisation, Weapons and Political Maxims of the ancient Hindus," compiled, enlarged and translated into Siamese by G. E. Gerini, with original remarks on the introduction and early use of fire-arms in Siam, and

comparative notes on Siamese and Hindu military usages, ceremonies and festivals; published by the Vajarindr Printing Press, Bangkok, 1894. Being in the Siamese language this very interesting work can be but little known except to Siamese, and coming from the pen of such a scholar it deserves attention.

Gerini says that gunpowder was invented in India before the birth of Buddha and mentions the existence in the Ramayana of a passage concerning fire-arms, which supports this theory (p. 117). He states that in the writings of the Chinese and Arabs there are passages, which are to be regarded as trustworthy, claiming that these two nations used fire-arms at a date many hundreds of years before King Ramesuen, whose date he gives as 746 or A.D. 1384. He quotes one passage from the Legends of Phra Ruang (កំ យន ព្រះ កេីវិតិ សុមទៅ ពវរវង) p. 120, to prove that the people of Siam knew how to use gun-powder and guns, both great and small, many years before the people of Europe. Translated it reads:— “When Sukhodaya was still the capital and when the Siamese Era Chulasakaraj was first established, there were big guns placed at intervals along her walls.” He admits that this work is not altogether reliable, since it contains certain glaring anachronisms proving that it was re-written during or after the reign of Phra Ramathibodi II., subsequent to the discovery of America, but he does not entirely reject the evidence on that account. He says, however, that we must not understand that these guns were of the European description, but that they were of Hindu pattern called ‘Nalika’ and ‘Sa-tak-ni’ (ណាតិកា និ សុមទៅ ឃុី), weapons which he describes upon pp. 52 and 70 respectively, where he states that the former were small and about the length of the modern English carbine, adding on p. 113 that they were made of bamboo, the latter—weapons to slay a hundred men—were made of black iron covered with iron spikes (តើលិន ឃុីធម្ម).

Gerini next quotes two passages, one from the Kot Monthien Bal, written in Chulasakaraj 720 (A. D. 1358),

mentioning fire-arms in the army of Phan Inthara-raja, the other from the Annals of Aynthia (Vol. I., pp. 25 and 26)* where it is stated that "in the year Chulasakaraj 746 (A. D. 1384-5), the year of the Rat, being the sixth year of the decade, King Phra Ramesuen led an army against Phya Kampucha, who fled by boat, whereupon the King ordered guns with cocks and triggers (ຫຼັງ ແນ ສູລຸ) to be fired at the powder pots (ໜັງ ດີມ) which were struck and exploded." The weapons here mentioned Gerini evidently takes to have been guns in the European sense (p. 123), and the two passages, he says, are entirely credible because cannon had been in use in Europe since A. D. 1330, some thirty years before the first of these two dates.

In searching for the latter passage in the Annals of Ayuthia, I lighted upon another (Vol. I. pp. 6 and 7) stating that in the same year, 746, when Phra Ramesuen laid siege to Chieng-mai, artillery was employed to breach the wall, and that in the final assault upon the city fire-arms great and small were employed.

But how could the Thai people have obtained a knowledge of such weapons? Is it possible that there were Europeans in this country as early as the year 1358? The route to the far east via the Cape of Good Hope was not discovered for another hundred and forty years, yet Gerini must have had some satisfactory argument in support of his theory that fire-arms of the European description had been introduced into Siam by that date.

Is it not possible that the knowledge of these weapons reached this country by way of China? There was constant intercourse between Siam and that country in those days, and it was customary to send ambassadors to China on the accession of a new Emperor. Moreover during the fourteenth century "there was considerable intercourse between Europe and China. Hung Wu, who declared himself Emperor in A. D. 1368, employed numbers of adventurers from the near and middle east and even from as far west as Venice; and soldiers from all Asia to the Caucasus fought his battles in the South of China." (Encyclopaedia Britannica,

* Bradley's Edition pp. 36 and 37.

History of China). From thence to Siam is not a very far cry, and it would, therefore, seem possible that some bold spirits may have made their way to this country. Anyone with a knowledge of European fire-arms and how to make them would have been sure of a welcome.

A decree of King Trai Loka (สมเด็จ บรม ไตรโลกนารถ) given in the year A. D. 1454, contained in Vol. I. of the Laws of Muang Thai, (หนังสือ เรื่อง กฎหมาย เมือง ไทย published by Bradley) defining the status* (ศักดิ์ นา) of the civil and military officials mentions a corps of artillery with fire-arms great and small — กរມ ปืน ใหญ่ —, gun-founders — ช่าง หล่อ, powder-makers — กอง น้อย

ต่ำ ติน, and powder magazines, — รักษารถ ตีก ติน. It seems certain, then, that the Siamese possessed a cannon foundry and artillery during his reign.

Moreover care was evidently taken that the weapons should be used to the best advantage, for the decree goes on to speak of ผู้ แม่ง ปืน — European gunners, in addition to whom there were officers for the training of the troops according to European methods — เกน หัว อายุ่ง ผู้ง.

Incidentally it may be mentioned that the decree alludes to a contingent of Japanese — อาณา ญี่ปุ่น. Such an organisation must have taken some years to build up.

Here is evidence that eighty-six years after the accession of the Emperor Hung Wu, to whom an ambassador was sent from Siam in 1367 (Journal of Siam Society, Vol. 2, p. 11.) Europeans were in Siamese employ in connection with the use, and doubtless also the manufacture, of fire-arms. How could they have reached Siam

* In feudal times the status of the King's subjects was determined by the amount of land (41 fields) actually or potentially held by them. This decree of King Trai Loka allocated the amount to which each official was entitled. The custom, which still survives, was to regard every official post as entitling its holder to the tenure of so much land, the amounts ranging from 100,000 to 5 fields (rai.).

if not via China? For it is stated on good authority (Ency. Brit.) that "no trustworthy evidence of an explosive in India is to be found until the 21st April 1526," twenty-eight years after the Portuguese first landed on the Malabar coast.

The Annals of Ayuthia mention this decree in the account of the reign, which began, they say, in 796 (A.D. 1434-5). The version of Luang Frasert (vid. Journal of Siam Society Vol. VI. Part 3, p. 5) puts that date at 810 (A.D. 1448-9), and on the evidence of the decree itself King Trai Loka was on the throne in 1454, for the preamble mentions the day on which it was given, Sunday the 10th day of the waning moon in the year of the dog B.E. 1997, or A.D. 1454.*

It would appear, then, that there exists a claim that fire-arms were in use in this country in the last half of the fourteenth century; and that this claim is supported by the evidence contained in King Trai Loka's decree that there was in existence a complete establishment for the manufacture of cannon and small arms, together with necessary ammunition, by the end of the first half of the fifteenth century. Moreover such a claim is not lightly to be discredited, for the intercourse between Europe and China, and China and Siam during the fourteenth century was such as to render the introduction of those weapons practicable.

But, you will naturally ask, is there any evidence that fire arms were known in China thus early? Much has been written on this subject. It is impossible, to go fully into it all, but I must mention one or two authorities and their conclusions. In his book "The Middle Kingdom" (Vol. 2, p. 89) Wells Williams, referring to Mr. W. F. Mayers researches, says, "No evidence exists of the use of gunpowder as an agent of warfare until the middle of the twelfth century, nor did a knowledge of its propulsive effects come to the Chinese until the reign of Yung Loh, in the fifteenth century — a thousand years after its first employment in fire-crackers."

* The date of the decree as given in Bradley's edition, B. E. 1298, is obviously wrong, but, assuming that the figure 2 is a misprint for a 9, we obtain the date 1998 which coincides with the period of the reign. That year was not the year of the Dog, but the next after. Prince Damrong, therefore, holds that 1997, or A.D. 1454 is the correct date of the decree.

Vid. History of Siam by H. R. H. Prince Damrong Vol. I p. 463.

Professor Schlegel, however, in his work *T'oung Pao* (1902) on the invention and use of fire-arms and gunpowder in China, prior to the arrival of Europeans, says:—"We read in the History of the expedition sent by Kublai Khan in 1293 to punish the King of Java, that.....the army was divided into three bodies in order to attack Kalang; it was agreed that.....they should meet at Daha and commence the battle on hearing the sound of the p'au," a word which Schlegel insists means a cannon firing shot, and he quotes a dozen Chinese passages in support of his contention. He continues....."I maintain that not only the Mongols in 1293 had caanon, but that they were already acquainted with them in 1232," for, we read, he says, 'in the Pai Pien (published in 1581) that on the walls of the city of Si-nga (in Shen-si) was preserved a long time an iron cannon, called 'Heaven Shaking Thunder'"; and an exact description of this weapon is given.

"Somewhat later, in A.D. 1287, Kublai Khan, during his war with Nayan, employed in a nocturnal expedition 10 soldiers, armed with guns whose sound so frightened the enemy that he fled on all sides."

"We have thus no reason to doubt that the Mongols employed fire-arms in their expedition to Java, and the Javanese probably learnt from them to employ them also."

Marsden (*History of Sumatra*, 3rd Edit. p. 347) equally says that fire-arms were known in Sumatra before the arrival of the Portuguese."

"In another Javanese poem, the *Serat Kanda*, it is told that, in the battle with an army of Siyem (Siam), Kamboja and Sokodana* two large guns were captured, to which the names of Guntur Geni and Jagur were given."....."the battle must have taken place (about) 1304, (forty odd years before the battle of Crecy). It would prove at all events that the Siamese and Cambodians made use of cannon in their war with Madjapahit, as early as the 14th century."

Gerini's theory, therefore, has the support of Schlegel's opinion.

* Sokodana is a district in S. E. Sumatra.

The only point that seems to be in doubt is whether the fire-arms used by the far-eastern peoples at this early date actually fired shot or merely discharged fire and vapours. A passage in the Annals of Ayuthia says that Prince Inthara-raja, a son of King Trailoka, in a fight against the forces of Nakhon in 809 (A.D. 1447) in which he took part mounted on an elephant, was surrounded by four hostile elephants and was shot in the forehead—ດីលុ ឬ និង តិនុ និង សិរី. Now although it may be argued that the word និង does not necessarily mean a gun, I believe that the injury thus described was a gun-shot wound. The incident occurred some sixty years before the advent of the Portuguese.

The MS. to which I have alluded as containing a list of the names of the guns at the Ministry of War, contains also a copy of a very old treatise on powder-making for the purposes of war. As a matter of fact the book opens with this treatise; the details which follow are a later addition.

This old treatise gives a number of prescriptions for mixing powder of various kinds; one for the making of incendiary rockets; another for discharging flames with which to terrify elephants, horse, and foot; others again for producing murk and darkness; and there are also directions for the shooting of men and animals by means of soft bullets when it is not intended to kill the victim. This last also goes to prove that the propulsive power of powder was known in Siam in those primitive times when the discharge of flames and a loud explosion were sometimes sufficient to scare an enemy into flight.

Before I close I wish to express my deep gratitude to the numerous friends who have aided me in the preparation of this paper especially to H. R. H. Prince Damrong, who has given me much valuable information and done me the honour to read and correct the draft; to H. R. H. The Chief of the General Staff for permission to photograph the guns; also to those of my colleagues and pupils in the Royal Pages College who have rendered me assistance in translating Siamese passages into English; and finally to Professor Cœdès, at whose suggestion I undertook the task, and to whose active interest and constant collaboration its consummation is principally due.

At the conclusion of the paper the President, Mr. W. A. Graham, rose to move a vote of thanks to Mr. Sewell for the valuable and interesting record which he had compiled. Speaking from his own personal knowledge of the Pattani district the President mentioned that the old cannon foundry was a conspicuous object on the plain in going to Jering. According to local tradition, it never was finished, having been struck by lightning three times, and abandoned.

There was no mystery, he said, about the Spanish dollars; they did not imply any connection between Spain and the peninsula, but were simply trade dollars, used when Spain had control of the supplies of silver. When he first went to Kelantan they formed the whole of the silver currency there.

With regard to another point mentioned by Mr. Sewell, it was undoubtedly true that the captains of the sugar barques coming to Bangkok did barter many guns, some of them now to be seen along the banks of the river. They were thereby enabled to take on some private cargo, and the loss of the guns could be accounted for to the owners by the heavy storms encountered on the return voyage.

Professor Coëdes explained with regard to the manuscript from the National Library that the treatise it contained on powder making etc., for the purposes of war undoubtedly dated back to 1580. The actual manuscript was, of course, a copy.

Mr. Crosby, referring to the inscription on gun No. 13, 181 ณ ၁၂။၅၃, said he could not attach to it the meaning "Cast into the Lake," but considered that it must be taken to mean that the weapon was to be "set up at the South end of the Lake."

As to the date of the introduction of firearms into this part of the world, he entertained a profound scepticism with regard to the claims supported by Mr. Sewell. In saying that, he was referring only to fire-arms of the western pattern, which no doubt were brought in with western trade.

Alluding to Nang Tani, Mr. Crosby said it should be remembered that in the days of the early factories, Dutch and English, the ruler of Pattani was always a woman, and one who did not marry.

Mr. Sewell replying said that the translation of the inscription to which Mr. Crosby objected was the meaning which Prince Dainrong attached to it. His Royal Highness had told him that it was a fact that shortly before the fall of Ayuthia a number of guns were submerged in the lake by the Siamese, in the hope that they would thus escape capture. Mr. Crosby's meaning of the words **වු ගැ** was that upheld by Phya Boran Rajatanin.

With regard to the question of the date of the introduction of fire-arms into Siam, it had always been the accepted theory among Europeans that fire-arms were invented in Europe; but a few scholars were of the opinion that it was the people of Asia who first invented them. In his paper he had tried to bring forward one or two arguments in favour of that contention.

CONTRIBUTION TO THE KNOWLEDGE OF THE INSECT-GALLS OF SIAM.

BY

DR. W. DOCTERS VAN LEEUWEN,
BUITENZORG, JAVA.

INTRODUCTION.

Our knowledge of the plant-galls of Siam is very scanty, and in the literature which stands at my disposal in Buitenzorg I cannot find any description of such plant-diseases from Siam. It may be therefore of interest to give a description of the galls collected by me during a few days trip in that country. Part of this material was collected in the direct vicinity of Bangkok, and part along the railway which connects Bangkok with Malakka.

On September 30th, 1920, I departed, in company with the American botanist, Dr. J. F. Rock, from Alor Star for Bangkok Noi. This is a three days journey through a very monotonous country, consisting almost entirely of dry or swampy grass plains intermixed with thin forests of Leucodendron and coastal marshes. Only in the surroundings of Tung Song were there hills covered with forest. We stopped at a number of small railway stations which are mostly surrounded by grass and shrub jungles.

During halts at stations I had an opportunity to jump out of the car and to collect what was growing in the direct vicinity of the railway. Twenty-two galls were collected in this way, directly labelled and dried or partly preserved in alcohol.

In Bangkok I stayed ten days. The surroundings of this capital consist chiefly of cultivated country. The real virginal forest does not grow near the city and in a few places only are there remnants of the old flora. Dr. A. Kerr was so kind as to accompany me on some collecting trips and I wish to express hearty appreciation of the assistance given me by him. Especially round an old temple, Wat Lum, in the dense shade of old Dipterocarpus trees I was able to make a small collection of galls which have some resemblance to the galls of virginal forest,

My collection, consisting of 37 different galls, cannot of course give more than an idea of the gall-flora of a country so rich in plants. Undoubtedly it will be easy to collect hundreds more in the uncultivated parts of the Kingdom.

Most galls were found in open places among shrubs and hedges and only a few, as mentioned above, in shady places. In connection herewith it was to be expected that the greatest part of the galls would be formed by the action of gallmites and only a few by itonids. In a former publication⁽¹⁾ on the galls of Java (in which country at the present time about 1000 different galls are known to me) I drew attention to the fact that generally the juicy gaat-galls abound in the moist virgin forests while in drier regions mite-galls prevail. Among the 37 gall producers there are 19 gall-mites, 5 gall-midges, 7 thripes, 3 moths, 2 jumping-lice and one plant-louse.

The literature cited consists chiefly of articles from my hand on the galls of Java; they are mentioned as Java, Beltrag, etc., they appeared partly in the periodical "Marcellia" edited by Prof. A. Trotter, Avellino, Italy, partly in the "Bulletin du Jardin Botanique de Buitenzorg." The illustrations are by the native draughtsman Hoesen, and show the galls in their natural size. Of the thripsgalls I collected 7 different kinds. The thripes are now in the possession of Dr. H. Karny, the well-known writer on this group of insects. Some of the thripes collected are known from Java but others are new to science. The description of this material will appear later in this Journal.

Below follow the descriptions of the cecidia, those not yet described have been marked by an asterisk.

DESCRIPTION OF THE GALLS.

No 1. *Acacia leucophloea* Willd.

Fam : Leguminosae-Mimosaceae,

This is an acarid-gall caused by *Eriophyes acaciae* Nal.

It is common in Java and mostly abundant on the infected trees. The material collected by me was part of a small tree without flowers, the determination of this specimen is therefore not quite

(1) W. und J. Docters van Leeuwen-Reynvaan. Einige Gallen aus Java. Sechster Beitrag. Bulletin du Jardin botanique de Buitenzorg. Série II, No. III, 1912, page 2.

sure. But the gall is in all points identical with the galls collected in Java by me.

They are only about $1\frac{1}{2}$ -2 mm. in extent and developed on either side of the small leaflets, so as form a tiny elongated or ball shaped excrescence. The surface is glabrous. Inside there exists a chamber with excrescences from the inner wall, such as is often found in acarid-galls. This chamber has an aperture on the under-surface. The wall is covered with white unicellular and unbranched hairlets.

South-Siaun. Wong Pong, 2/X 1920. Herb. 4748.

Literature : Java. Beitrag III. Marcellia IX. 1910. No. 91. p. 37.

No 2. *Allophylus cobbe* Bl.

Fam : Sapindaceae.

Leafgalls caused by an acarid : *Eriophyes allophyleus* Nal.

A very common gall in Java and Sumatra everywhere this polymorphous plant occurs. Towards the upper surface of the leaf develop small flat vesicles mostly of a yellow colour. The bladders are irregular and from 1-4 mM. in diameter. The under surface is covered with an erineum, consisting of long unicellular and unbranched hairlets.

Bangkok. Wat Lum. 9/X 1920. Herb. 4778.

Literature : Java. Beitrag IV. Marcellia IX. 1910. No 151. p. 168.

*No 3. *Azima sarmentosum* Benth.

Fam : Salvadoraceae.

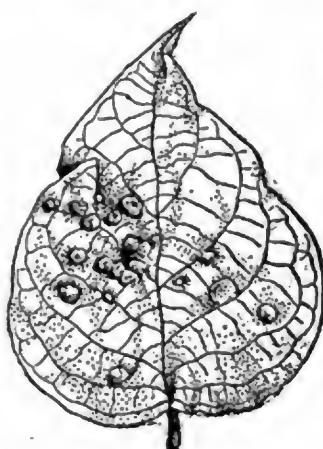


Fig 1. A leaf of *Azima Sarmentosum* Roxb. ; with mite-galls.

Leafgall caused by a gallmite. This gall is common on this plant which grows on uncultivated grounds and along roadsides. On the upper surface of the leaf there are little discs which are slightly convex, or flat semiglobular excrescences. See figure 1. On the under surface of the leaf they have the same disc-like form or they may be far less developed. But in the middle there is always a short chimney or funnel giving access to the larval cavity tenanted by hundreds of gallmites. The innerwall of the cavity and

the exterior are glabrous. In the cavity there are however developed several excrescences which are attached on the upperside of the chamber.

South-Siam, Pran, 2 Oct. 1920. No. 4746; Bangkok, 3 Oct., 1920. No. 4753.

*No 4. *Barringtonia acutangula* Gearth.

Fam: Lecythidaceae.

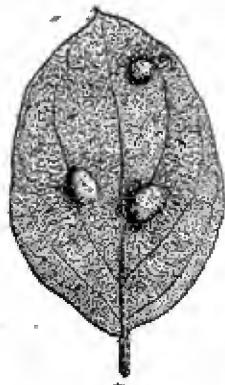
Leafgalls caused by a gallmidge. In Java we have found a similar gall, also caused by a gallmidge, on the leaves of *Barringtonia spicata* Bl. The galls form small circular flat swellings on both sides of the leaves. On the upper side of the leaf these swellings are only very low, they are more developed on the underside. These small excrescences are formed by the action of usually three larvae, which live each in a very small chamber, lying near the centre of the gall.

Bangkok, Wat Lum. 7 Oct. 1920. No. 4768.

Literature: Java. Beitrag III. Marcellia IX. 1910. No. 99 p. 41.

*No. 5. *Carissa carandas* L. (syn. *Ardhuina carandas* Schum.)

Fam: Apocynaceae.



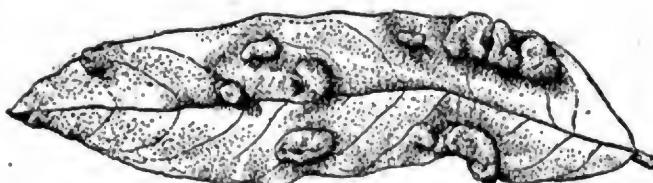
Leafgall caused by a gall-mite. This gall forms small flat bladders on the upperside of the leaf, (see figure 2). They are mostly circular or ovoid ; 2-4 mm. long and broad and only $\frac{1}{2}$ mm. high ; on the undersurface of these bladders there are developed thin and long excrescences which fill the cavity and are covered with stiff pointed hairs, consisting of 2-3 cells.

Fig 2. A leaf with mite-galls of *Carissacarandas*, L.

South-Siam. Wang Pong. 20 Oct., 1920. No. 4747.

*No. 6. *Combretum trifoliatum* L.

Fam: Combretaceae.

Fig. 3. A leaf with gall-mite galls of *Combretum trifoliatum* Linn.

Leafgall caused by a gall-mite. The plant on which this and the following gall were collected was not in bloom therefore it is not possible to name it with surety. But this gall resembles so strikingly a not yet described gall found by me near Batavia on this *Combretum* species, and the leaves are so alike the leaves of *Combretum trifoliatum* that I feel sure that the galls belong to the above named plant.

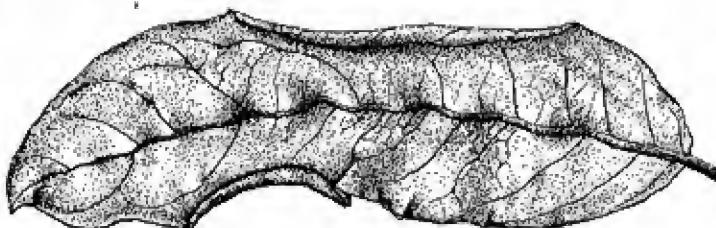
The galls are small but high bladders on the surface of the leaf mostly of a yellow colour, slightly incurved at their base. They measure 4-10 mm. and are mostly irregular and ovoid. They are often so closely attached to each other on one leaf that this may be curved and wrinkled. (See figure 3).

At the undersurface of the leaf there is a wide opening giving entrance to the inside of the bladder. The wall is not thickened but covered with a dense white erineum consisting of long unicellular pointed hairs with a relatively thick wall.

South-Siam, Rajburi, border of a lake or of an overflowed rice-field, 2 Oct. 1920. No. 4749.

*No. 7. *Combretum trifoliatum* L.

Fam: Combretaceae.

Fig. 4. A leaf with mite-galls of *Combretum trifoliatum* Vent.

Leafgall caused by a gall-midge. The border of the leaf is partly or totally rolled; this rolling is developed to the undersurface and often the leafborder contracted and convex, as may be seen in the figure 4 of this gall. The gallchamber is only a thin canal, tenanted by tiny of white gall-midge-larvae.

South-Siam, Rajburi, border of a lake or an overflowed rice-field. 2 Oct., 1920. No. 4750.

No. 8. *Cordia myxa* L.

Fam: Boraginaceae.

Leafgall caused by a gall-mite: *Eriophyes corniae* Nal. On the uppersurface of the leaf are developed irregular round bladders, mostly of a yellow colour. They are 2-5 mM. in diameter. There may be found specimens which are developed in the opposite direction, i.e., in which the bladder is on the nether surface. The underside of the gall is covered with a dense white erineum consisting of long frilled and twisted multicellular hairs. A very common gall, already described from Java and Celebes. (Under the name of *C. Suarcolens* Bl.)

Bangkok, in a Garden, 4 Oct., 1920. No. 4754.

Literature: Java. Beitrug V. Marcellia IX, 1910. No. 161 p. 174;

Celebes, Bulletin. Serie II. No. XXI. 1916. No. 14.

p. 28. Figure 14.

No. 9. *Crotalaria Sultiana*, Andt.

Fam: Leguminosae-Papilionaceae.

A stem-gall caused by a moth, *Grapholita subrufillana*. Snallen. The stems distend into short fusiform galls. Their length varies between 1-3 cM, with an elevation up to 1 cM. They are mostly situated at the termination of the twig, because the growth of the growing point of the twig is often arrested after the infection. The anatomy and biology of this gall was also investigated by us. The nourishment for the caterpillar is supplied by a callus tissue growing into the cavity.

Also collected and described from Java.

Bangkok, 5 Oct. 1920. No. 4755.

Literature: 1) Java. Beitrag I. No. 3. Marcellia VIII. 1909. p. 24.

Fig. 3.

2) Ueber die Entwicklung und Anatomie einiger Markgallen und über Kallus. Recueil d. Trav. bot. Néerlandais. Vol. VIII. 1911. p. 16.

*No. 10. *Dipterocarpus alatus* Roxb.

Fam: Dipterocarpaceao.

A leafgall caused by a thrips, *Coryphothrips trochiceps*, Karny n. g. n. sp.

Inquiline: *Gynaikothrips siamensis* Karny. n. sp.

This gall was very common in the vicinity of an old temple near Bangkok. Practically all the young leaves of the seedlings and young plants of this giant tree were badly infected. The margin of the leaf is rolled over the undersurface and often the whole leaf-blade is curved downward and covered with yellow or redbrown spots.

Wat Lum near Bangkok, 7 Oct. 1920, No. 4766 and 9 Oct. 1920, No. 4773.

* No. 11. *Elytranthe globosa* (Roxb) Engl.

Fam: Loranthaceae.

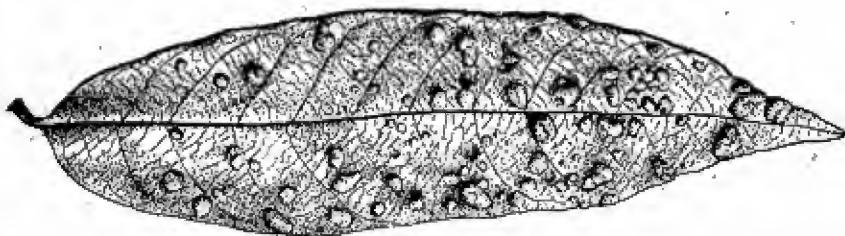
Fig. 5. A leaf of *Elytranthe globosa* Eng. galled by an aphid.

A leaf-gall caused by an Aphid. The young leaves are curved upwards like the sides of a boat; the margins of the rolled leaves meet over the middle. (See figure 5). In addition the leaf-blade is slightly thickened and silvery-grey on the outside. As the growth gets older the margins unroll of their own accord, so that the animals can easily leave their dwelling place. I have found this gall in Buitenzorg, Java, but up till now it has not been described.

South-Siam, Chaiya, shrub-jungles. 1 Oct. 1920. No. 4741.

* No. 12. *Euphorbia* spec.

Fam: Sapindaceae.

Fig. 6. A leaf of *Euphorbia* spec. with mite-galls.

A leafgall caused by a gallmite. The galls are irregular bladders 2-6 mm. in diameter which resemble the galls on *Combretum trifoliatum* Vent. (See No. 6), but they are not so large. (See fig. 6). The bladders are about 3 mm. high and mostly of a yellow colour. The underside of the bladder is covered by a velvety erineum, which consists of unicellular and tiny hairs.

Bangkok, Wat Lum, shady places. 7 Oct. 1920. No. 4764.

26078

No. 13. *Ficus Benjamina* L.

Fam: Moraceae.

A leafgall caused by a physapod. A very common gall all over the tropics. Both parts of the leafblade are folded upwards so as to form a small but broad chamber. The main nerve forms the backside of the gall and is slightly curved. The leaf remains smaller than the normal leaf and is covered with dark, almost black spots. Inside the galls, which I have collected in Siam the following species of physapod were living. Probably *Gynaikothrips Uzeli* Zimm. is the gallformer; the other ones only inquilines: *Gynaikothrips* nov. spec. (*vic. convolvens*) and *Androthrips malastomae* Zimm.

Bangkok, 3 Oct. 1920. No. 4753.

Literature: 1) Java. Beitrag 2, Marcellia VIII, 1909, pag. 96.
No. 39.

2) H. Karny und Docters van Leeuwen-Reynvaan.
Ueber die Javan. Thysanopteroecidien und deren
Bewohner. Bulletin Jard. bot. de Buitenzorg;
Série 2. No. X. 1913. p. 7. No. 5. fig. 2.

No. 14. *Ficus glomerata* Roxb. var. *chittagongia* Kurz.

Fam: Moraceae.

Leafgall caused by a psyllidae. A very common gall in Java and Celebes. On the uppersurface of the leaf are developed irregular ball-shaped or oval excrescences of a light green colour, about 4 mM. broad and high. On the undersurface there is only a small outgrowth with an opening, which gives access to the gall-chamber tenanted by a psyllid larva. The galls which were found in Java and Saleier (Celebes) are developed on the undersurface but as for the rest they are the same as the galls collected in Bangkok.

Bangkok, Riverside, Klong Bangkok Noi. 9 Oct. 1920. No. 4775.

Literature: Java. Beitrag IV, Marcellia IX. 1910. p. 179. No. 172
Fig. 71.

Celebes. Bull. Jard. bot. Série II. No. XXI. p. 30.
No. 22.

* No. 15. *Ficus glomerata* Roxb. var. *chittagongia* Kurz.

Fam: Moraceae.



Leafgall caused by a gallmidge. There are very flat excrescences on both sides of the leafblade; about 3 mm. or less in diameter. See figure 7. The surface of the gall is glossy with a yellow or reddish hue. Inside there is a very small larval chamber tenanted by a gallmidge—larva; the grown animals leave their chamber through a tiny opening on the underside of the leaf. They were abundant on one tree growing on the border of a canal.

Fig. 7. A part of a leaf with gall-midge galls of *Ficus glomerata* Roxb.

Bangkok, Klong Bangkok Noi, 9 Oct. 1920. No. 4781.

* No. 16. *Ficus heterophylla* L.

Fam: Moraceae.

A leafgall caused by a gallmite. This gall closely resembles the mite-gall so prevalent on the leaves of *Ficus ampelos* (Burm f.) in Java and caused by *Eriophyes naucus* Nal. The galls are tiny excrescences on both sides of the leaf-blade about 1 mM. in diameter and 1 mM. high. On the upperside they are more or less spherical, on the underside of the leaf coniform and on this side the orifice is developed.

Bangkok, Wat Lum, shady places. 9. Oct. 1920. No. 4774.

Literature: Java. Beitrag III. Marcellia IX. 1910. No. 107. p. 44.

No 17. *Ficus hispida* L. fil.

Fam: Moraceae.

A leafgall caused by a gallmite. The same gall was found by me on the same *Ficus* in Sumatra (already described but under the

erroneous name of *Ficus hirta* Vahl), on Krakatau and in the botanical Garden of Penang. In Java where this plant is very frequent I did not find one single gall. Also Ruebsaamen mentions, a similar gall-growth on *Ficus* spec. of Pulu Weh near Sumatra. The galls appear as light-green, granular, accumulations on the underside of the leaf. They are sometimes small but mostly they form irregular, large patches on the leafblade. On the upperside of the leaf they are slightly concave and of lighter colour than the leaf itself. They consist of irregular excrescences in the form of a callus-tissue; these growths leave openings and channels for the animals to live in.

Bangkok. Wat Luu. 7 Oct. 1920. No. 4747

Literature: Beschreibungen von Gallen aus Sumatra und Simaloer. Bull. Jardin. bot. de Buitenzorg. Série II. No XXI. 1916. p. 8. No 13.
Ruebsaamen. Gallen aus Afrika und Asien. Marcellia X. 1911. No 40. p. 129.

No 18. *Ficus retusa* L.

Fam. Moraceae.

A leafgall caused by a physapod. The same gall as the already described on *Ficus Benjaminia* L. (See No 13), but the surface is more reddish brown. Inside there live different species of thripes but very young galls are only tenanted by one animal; this proved to be *Gynaikothrips Uzeli* Zimm. This species will probably be the cause of the deformation, the other ones which are often very abundant are the inquilines. Especially *Giganthothrips elegans* Zimm. is very prevalent and often attached to the exterior of the gall. *Mesothrips jordani* Tumm. and *Leptothrips constrictus* Karny lived also in the galls.

A very common gall all over the tropics.

Bangkok, 9 Oct. 1920. On 4772.

Literature see under *Ficus Benjaminia* L. (No 13).

No 19. *Fluggea microcarpa* Bl. (= *Fl. virosa* Baill.)

Fam: Eupholiaceae.

Leafgall caused by a gallmite. A very common gall in the tropical countries. On the upper or undersurface very small excrescences of a yellow or reddish colour, and not more than 1 mm. in

diameter. On the opposite surface there is only a very small aperture giving access to the central cavity.

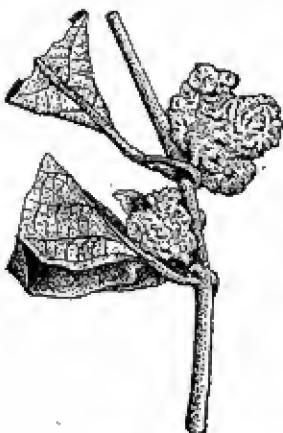
South-Siam, Surasthra Dam, 1 Oct. 1920. No 4736;

Bang-Saphan-Yai, 2 Oct. 1920. No 4744.

Litrature: Java. Beitrag II. Marcellia, Vol. VIII, 1909
pag. 98. No 43.

* No 20. *Hymenodictyon parvifolium* Oliver?

Fam: Rubiaceae.



Leafgall caused by a thrips. These galls resemble the thripgall on *Aporosa microcalyx* Bl. which is common in Java. This infection assumes the shape of closely strewn lightgreen bladders impeding the full development of the leafblade; mostly anostomosing or conglomerating laterally so as to form compact bunches. See figure 8. They are 10-20 mm. in diameter.

Fig. 8. Two thripgalls of *Hymenodictyon parvifolium*

The name of the plant is not sure, but the material resembles specimens collected in Cochin-China.

The galls were tenanted by two species of physapods. *Euthriips* nov. spec. (vic. *atavus* and *Haplothriips inquilinus* Priesner.

Litrature: Java. Beitrag VII. Bull. XV. 1914. No 359. pag. 6.

No 21. *Loranthus pentandrus* L.

Fam: Loranthaceae.

Stemgall caused by a moth. These are spindle shaped swellings of the young stem about 15-20 mm. long and with a longitudinal larval chamber. This gall is very prevalent also in Java and already described.

Bangkok. 8 Oct. 1920. No 4769.

Literature: Java. Beitrag IV. Marcellia IX. 1910. Pag. 186,
No 186. Figure 76.

No. 22. *Melastoma malabathricum* L. (= *H. polyanthum* Bl.)

Fam: Melastomaceac.

A leafgall caused by a thrips. Already known from Java.

The leafblade is folded or rolled upwards along the main-nerve and the two lateral nerves, forming long chambers. The exterior is mostly yellow or red coloured.

There are mostly more than one species of physapods inside the gall, so that the real gall former is not yet known. In this material Dr. Karny discovered: " *Mesothrips jordani* Zimm, *Gynaikothrips chaviceae* in large numbers and one specimen of *Androthrips melastomae* Zimm.

South-Siam, Klong-Chang, 1 Oct. 1920 No. 4738.

Literature: Java. Beitrag I. Marcellia VIII. 1909, pag. 108. No. 69.,
fig. 38.

No. 23. *Melothria* spec.

Fam: Cucurbitaceac.

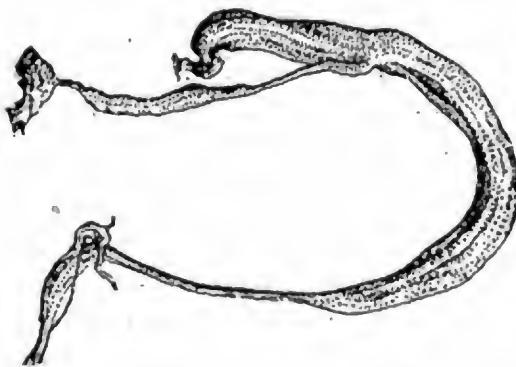


Fig. 9. Stem-gall of *Melothria* spec.

spot. One was of a green colour, the second dark red. It is possi-

A stemgall caused by a gall-midge. A similar gall is common in Java. The young twig and sometimes the leaf-stalks are developed into elongated plurilocular galls. See figure 9. The infected parts may become curved. Internally long larval-chambers are perceived. I found two specimens on the same

ble that they developed on two different species of Melothria, but not being in flower they could not be identified.

Bangkok, Wat Lum, 9 Oct. 1920. No. 4776 and 4777.

Literature: Java. Beitrag I. Marcellia VIII. 1909. pag. 29. No. 13.
fig. 8.

No. 24. *Nephrolepis exaltata* Schott. var. *monstruosa*.

Fam: Polypodiaceae.

A leafgall caused by a gall-mite: *Eriophyes pauropus* Nat.

A very common gall all over the tropical countries; the galls are mostly to be met with along the frond edges. They are globular or pyriform protuberances, and often constricted at the base. At the distal end there is an orifice giving access into a gall-cavity, divided into numerous compartments, by excrescences proceeding from the inner wall, which is pilose with branched multicellular hairlets. A full description is to be found in my study of these galls published in the Annales du Jardin bot. de Buitenzorg. Vol. XXXI. 1920.

Bangkok, in a garden. 3 Oct. 1920. No. 4751.

Literature: Java. Beitrag I. Marcellia. VIII. 1909. No. 16. pag. 31.
figure 11.

No. 25. *Pluchea indica* Less.

Fam: Compositae.

A leafgall caused by a gallmite: *Eriophyes micropus* Nat.

A very common gall on this plant of the coastal-marshes, known from Java and Celebes. On both sides of the leaf the gall is developed as circular flat or semiglobular yellow excrescences. The orifice is developed on the upper or on the undersurface of the gall; inside there is a larval chamber with pluricellular hairs.

South-Siam, Tachang, 1 Oct. 1920. No. 4739; Bangkok, 5 Oct. 1920. No. 4756.

Literature: Java. Beitrag IV. Marcellia IX. 1910. No. 193. p. 189.

No. 26. *Ruellia repens* L. (syn. *Dipteracanthus lanceolatus* Nees).

Fam: Acanthaceae.

A leafgall caused by a gallmite: *Eriophyes stereothrix* Nal.

A very prevalent gall in tropical countries. On the upper-side of the leaf small oblong bladders of a dark green or purple colour. On the underside this bladder is covered with a dense erineum, consisting of multicellular, branched hairlets.

South-Siam, Patalung, 30 Sept. 1920. No. 4729.

Literature: 1) Java. Beitrag II. Marcellia VIII. 1909 p. 114. No. 81.
fig. 45.

. 2) Erste Mitteilung über einigen Gallen aus Celebes
und den Inseln südlich davon gelegen. Bull. d. Jard.
bot. Buitenzorg, Série II. No. XXI p. 42. No. 59.
fig. 59.

No. 27. *Salacia* spec.

Fam: Hippocrateaceae.



Fig. 10. A leaf galled by thripes of *Salacia* spec.
The figure shows a single, elongated leaf that has been severely curled and twisted, with its edges meeting in the middle like a tight coil. The surface of the leaf is textured with small wrinkles and ridges.

A similar leafgall caused by the same animal was found in Java. Both parts of the leafblade are curved and rolled upwards so that the borders reach each other.

The surface of the gall is rough and covered with small wrinkles. See the accompanying figure 10.

South-Siam. Petahung. 30 Sept. 1920. No. 4730.

Literature: Java. Beitrag VII. Bulletin. Série II. No. XV. 1914. pag.
51. No. 487.

No. 28. *Sandoricum indicum* Cav.

Fam: Meliaceae.

A leafgall caused by a gallmite: *Eriophyes sandorici* Nal.

Prevalent in tropical countries, and occurring almost on every tree. Found by me in Java, Sumatra, Celebes, and Malakka. On

the upperside of the leaf are developed big bladders of a dark green, afterwards yellow colour. The underside of these excrescences is clothed with a dense erineum consisting of long, straight hairlets.

South-Siam, Langsuen, I Oct. 1920. No 4743;

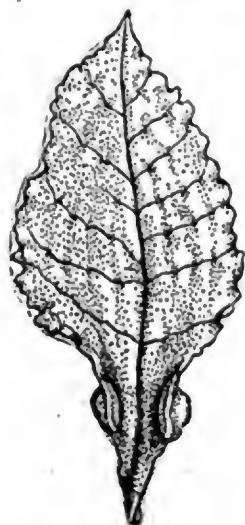
Bangkok, 5 Oct. 1920. No 4757.

Literature: Java. Beitrag VII. Bulletin. Série II. No XV. 1914.

p. 51. No 488.

No 29. *Sonneratia acida* L. fil.

Fam: Sonneratiaceae.



A leafgall caused by a lepidopteron. See figure 11. The gall is developed on the border of the leaf, mostly near its base. They resemble in form and size a wheat grain and are about 5 mm. long and 1 mm. thick. Inside there is a larval chamber tenanted by a caterpillar. Also collected in Java.

Fig. 11. Leaf of *Sonneratia acida* L. fil. with two galls caused by a lepidopteron.

Bangkok, Riverside. 5 Oct. 1920. No 4758.

Literature: Java. Beitrag III. Marecellin IX. 1916. pag. 58. No 144.

* No 30. *Trewia nudiflora* L.

Fam: Euphorbiaceae.

A leafgall caused by a psyllid. This gall has been collected in Java, but it has not yet been described. They are yellow bladders on the upperside of the leaf, which are contracted at their base, so

that there is only a small opening on the undersurface of the leaf. They are of a yellow colour and their wall is thin so that the larval-chamber is almost globular and spacious.

Bangkok. Wat Lum. shady places. 9 Oct. 1920. No 4783.

No 31. *Vangueria spinosa*. Roxb (?)

Fam: Rubiaceae.

A leafgall caused by a gallmite. The twigs and leaves belong probably to the above named shrub, but flowers and fruit being not present, identification was not quite sure. The gall is the same as that collected on the same plant in Java. The galls are small bladders on the upperside of the leaf, slightly contracted at their base. The surface of the gall and also that of the gallchamber is covered with a thick hairgrowth.

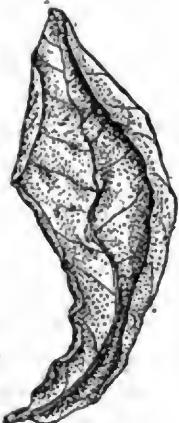
South-Siam. Tung Song. 30 Sept. 1920. No 4732,

Literature: Beitrag VI. Bull. d. Jard. bot. Série II. No III. 1912.

pag. 47. No 337. Fig. 150.

* No 32. *Vernonia elaeagnifolia* DC.

Fam: Compositae.



A leafgall caused by a thrips: *Gynaikothrips* nov. spec (vic. *G. chaviacae* and *longiceps*). The border of the leaf is rolled upwards so as to form a long chamber. (See the accompanying figure 12), wherein the insects live in all stadia of development. Mr. Karny the well-known thysenopterologist tells me that this gall is formed by a new species of *Gynaikothrips*, which will be described later.

Fig. 12. A leaf with
thrips-galls of *Vernonia*
elaeagnifolia D. C.

South-Siam. Takhoi, 1 Oct. 1920. No 4738.

* No 33. *Vernonia claegnifolia* DC.

Fam: Compositae.

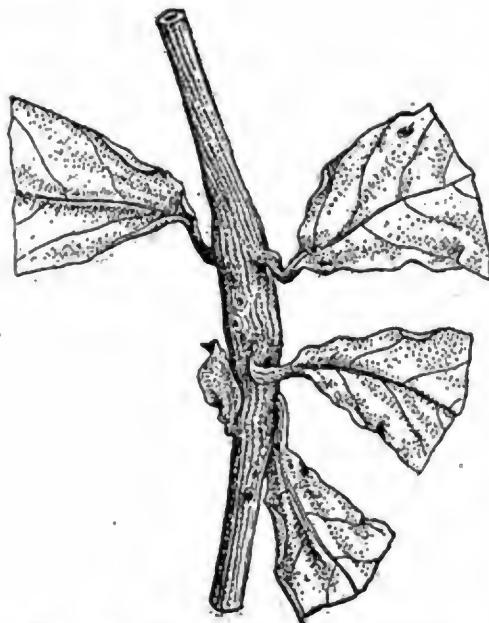


Fig. 13. A stem of *Vernonia claegnifolia*
D.C. galled by a dipteron.

South-Siam, Nong Wai. 1 Oct., 1920. No. 4742. Bangkok,

12 Oct., 1920. No. 4784.

No. 34. *Vitex pubescens* Vahl.

Fam: Verbenaceae.

A leafgall caused by a gallmite: *Eriophyes cryptotrichus* Nal. A common gall collected in Java, Sumatra, Malakka and Cochin-China. On the upperside of the leaf there are small yellow or dark-green bladders. About 2-3 mm. in diameter. The underside of these bladders is clothed with a thick erineum.

South-Siam. Ban Lam Node. 30 Sept., 1920. No. 4731;
Ban Nak 1 Oct., 1920. No. 4735.

A stemgall caused by a dipteron. The stems are slightly swollen and the internodia shorter, so that the leaves remain near each other (see the figure 13). The growing point is not damaged by the gall and grows farther, forming a normal stem and leaves. Inside there are one or more longitudinal larval chambers each tenanted by the larva of a fly. I found this gall too in the neighbourhood of Saigon.

Literature: Java. Beitrag VI. Bull. d. Jardin bot. d. Buitenzorg.

Série 2, No. III. 1912. pag. 49. No. 342. Fig. 153.

* No. 35. *Vitex* spec.

Fam: Verbenaceae.

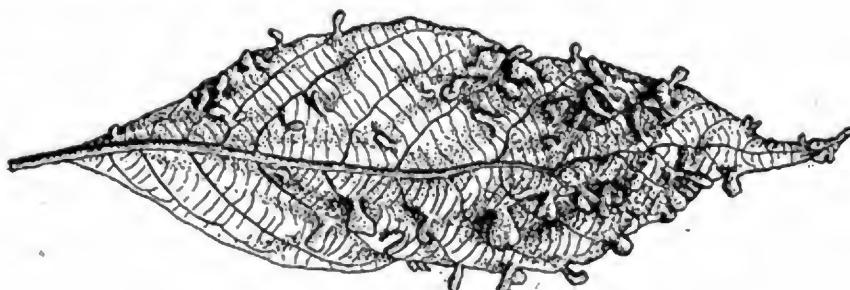


Fig. 14. A leaf with gall-mite galls of *Vitex* spec.

Leafgall caused by a gallmite. This gall closely resembles an acarid-gall on the leaves of *Vitex heterophylla* in Java. On the undersurface of the leaf are developed quite a number of conical or club shaped excrescences; densely covered with white hairlets, so that the galls have a greyish colour. See figure 14.

On the upperside of the leaf, there are only tiny hairy pustules with a small orifice in the centre. Often two galls are grown together longitudinally so as to form a club with a broad stalk.

The galls were plentiful on a shrub near the railway station, but there no flowers, so that it was impossible to identify the material.

South-Siam, Surasthra Dani, 1 Oct. 1920. No 4737;

Bang-Saphan-Yai. 2 Oct. 1920. No 4745.

Literature: Java. Beitrag 5. Marcellia X. 1911. pag. 90. No 249.

No. 36. *Wedelia biflora* DC.

Fam: Compositae.

A leafgall caused by a gallmite. Common on the tropical beaches and saltwater marshes.

I have seen this gall-growth in Java, Sumatra, Celebes, Krakatau, Malakka, Siam and Saigon. The galls develop principally on the undersurface of the leaf, among the ramification of the veins. On the upperside they are hardly visible. On the underside on one side of the top of the gall there is an aperture giving access to the gallcell.

Bangkok, 9 Oct. 1920. No. 4771.

- Literature: 1) Java. Beitrag VI. Bullerkin. Série II. N. III. 1921.
No. 349. pag. 51.
2) Gallen aus Celebes etc. Idem. No. XXI. 1916.
No. 70.
3) The galls of Erakatau in 1919. Annales du Jardin
botanique de Buitenzorg, Vol. XXXI. 1930. p. 81.
No. 23. fig 23.

* No. 37. *Wrightia mollissima* Wall.

Fam: Apocynaceae.

A leafgall caused by a gall-mite. This gall closely resembles the gall-growth on *Wrightia javanica* DC. collected in Java. On the uppersurface of the leaf there are developed semi-ball shaped excrescenses about 2 mM. in diameter. On the undersurface is a conical outgrowth directed to one side. They are easily recognisable by their light-green colous. Inside there is a spacious gall-chamber with a thin canal coming out on the top of the cone. This part of the gall and the inner wall of the canal is covered with long white hairlets. This gall was also very common in Saigon.

South-Siam, Chaiya. 1 Oct. 1920. No. 4740.

- Literature: Beitrag 8. Bulletin. Série 3. Vol. I. 1918. pag. 76.
No. 698. fig. 698.

Distribution of the gall-bearing plants among the plant-families.

1. ACANTHACEAE.

No. 26. *Ruellia repens* L. acarocecidium.

2. APOCYNACEAE.

No. 5. *Carissa carandas* L. acarocecidium.

No. 37. *Wrightia mollissima* Wall acarocecidium.

3. BORRAGINACEAE.
No. 8. *Cordia myxa* L., acarocecidiun.
4. COMBRETACEAE.
No. 6. *Combretum trifoliatum* L., acarocecidiun.
No. 7. " " dipterocecidiun.
5. COMPOSITAE.
No. 25. *Pluchea indica* Less., acarocecidiun.
No. 32. *Vernonia elieagnifolia* DC., thysanopterocecidiun.
No. 33. " " dipterocecidiun.
No. 36. *Wedelia biflora* DC., acarocecidiun.
6. CUCURBITACEAE.
No. 23. *Melothria* spec., dipterocecidiun.
7. DIPTEROCARPACEAE.
No. 10. *Dipterocarpus alatus* Roxb., thysanopterocecidiun
8. EUPHORBIACEAE.
No. 19. *Flueggea microcarpa* Bl., acarocecidiun.
No. 30. *Trewia nudiflora* L., psyllidocecidiun.
9. HIPPOCRATEACEAE.
No. 27. *Salacia* spec., thysanopterocecidiun.
10. LEOYTHIDACEAE.
No. 4. *Barringtonia acutangula* Gaertn., dipterocecidiun.
11. LEGUMINOSAE-MIMOSACEAE.
No. 1. *Acacia leucophloea* Willd., acarocecidiun.
12. LEGUMINOSAE-PAPILIONACEAE.
No. 9. *Crotalaria saltiana* Andt., lepidopterocecidiun.
13. LORANTHACEAE.
No. 11. *Elytranthe globosa* (Roxb.) Engl., aphidocécidium.
No. 21. *Loranthus pentandrus* L., lepidopterosecidiun.
14. MELASTOMACEAE.
No. 22. *Melastoma malabathricum* L., thysanopterocecidiun
15. MELIACEAE.
No. 28. *Sandoricum indicum* Cav., acarocecidiun.

16. MORACEAE.

17. POLYPODIACEAE.

- No. 24. *Nephrolepis exaltata* Schott. var. *monstruosa*.
acarocecidium.

18. RUBIACEAE.

- No. 20. *Hymenodictyon parvifolium* Oliver,
thysanopterocecidium.
No. 31. *Vangueria spinosa* Roxb., acarocecidium.

19. SALVADORACEAE.

- No. 3. *Azima sermentosum* Benth., acarocecidium.

20. SAPINDACEAE.

- No. 2. *Allophylus cobbe* Bl., acarocecidium.
 No. 12. *Euphorbia* spec., acarocecidium.

21. SONNERATIACEAE.

- No. 29. *Sonneratia acida* L. fil., lepidopterocecidium.

22. VERBENACEAE.

- No. 34. *Vitex pubescens* Vahl., acarocecidium.
 No. 35. *Vitex* spec., acarocecidium.



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CONTENTS.

	PAGE.
An Excursion to Lopburi, by Major E. Seidenfaden	66
Some Notes upon the Development of the Commerce of Siam, by Mr. W. Nunn	78
Note on "Pattani guns and Foundry Site," by Mr. John Bowen	103
Correction to Mr. Sewell's paper on "Some old Siamese guns"	104



An Excursion to Lopburi

(PAPER READ BEFORE THE SIAM SOCIETY ON THE
14th DECEMBER 1921).

The theme which I am going to treat of in this paper is not a new one, and has as a matter of fact already been the subject of one paper published in this Journal, namely, by Mr. R. W. Giblin in July 1908. It has also been treated in a most scholarly manner by H. R. H. Prince Damrong Rajanuphab, our gracious and learned Vice-Patron, in the first vol. of his *Phra Raja Pougsawadan*, to which I am much indebted and parts of which have been translated by Mr. J. Crosby, C. I. E., (to whose instructive notes I also am much indebted) and published in the Journal of the Siam Society (vol. XIII, part 2).

When, I nevertheless, once more venture to write upon the same subject, it is not with the wish to vie with the learning of the above cited authorities, but rather as an attempt to present a résumé of the entire history of Lopburi, which I think has so far not been undertaken.

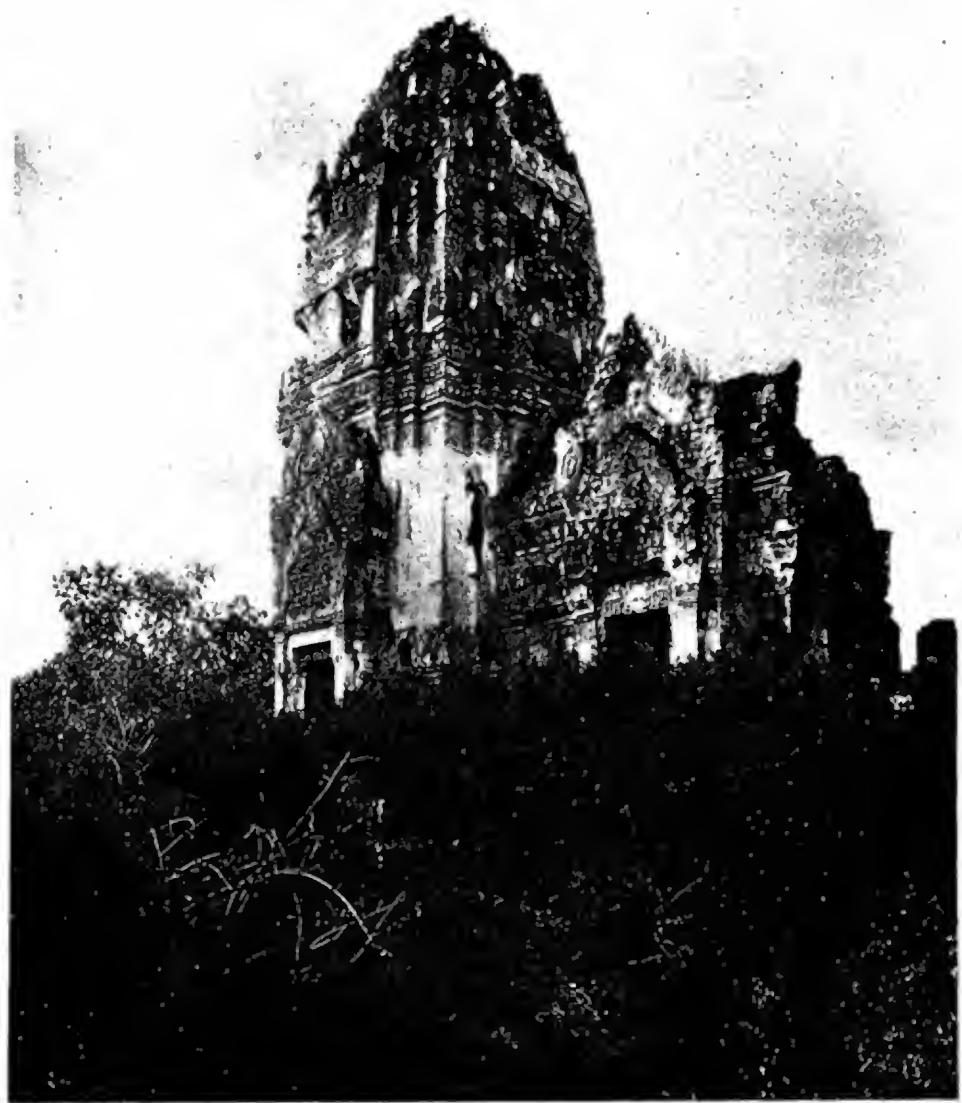
I.

Lopburi is a very old city and as such has had no less than two golden periods, one in antiquity and one of more recent date. The town is full of old temples and other interesting ruins, and is therefore well worth visiting, more especially as it is quite near to Bangkok — in fact only four hours travel by the Northern Railway. The city lies on a branch of the Mēnām Chao Phraya, called Mēnām Lopburi, 120 kilometres from the sea, and is built upon a sort of tongue of higher land stretching out to the Mēnām from the hills to the East of the town; to S. W. and N. it is surrounded by very low lying land, usually inundated during the rainy season. There is good evidence that some 1500 years ago the sea rolled its waves right up to the shores of Lopburi or at least to a point not far South of it. It is therefore easy to understand that when the Indian emigrants crossed the Bay of Siam coming from the Malay Peninsula one of their first colonies would be planted here. The sources from which we can obtain information relating to the history of Lopburi are fivefold, viz: (1) Phongasawadan Nua (the Northern

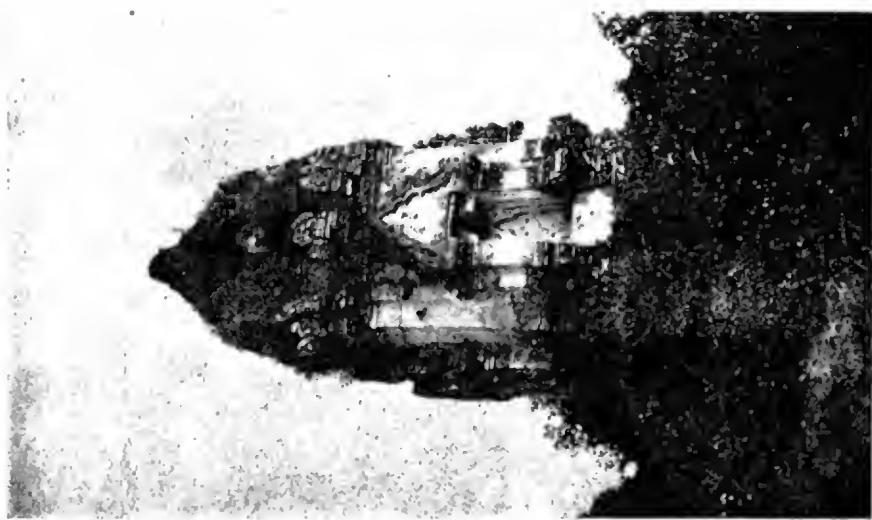
chronicles); (2) the old Chinese travellers' accounts; (3) Stone inscriptions; (4) the Ayuthia chronicles; and (5), last but not least, the accounts of the French ambassadors, travellers and priests from the latter half of the 17th century.

The name of the town was in the olden times *Lavo*. It was later on altered to Lophburi (often pronounced by the peasants as Nokburi) and, according to the legendary accounts of the Northern Chronicles, was founded by King Kalavarnadis called the black Tissa from *Taksila* A. D. 468.

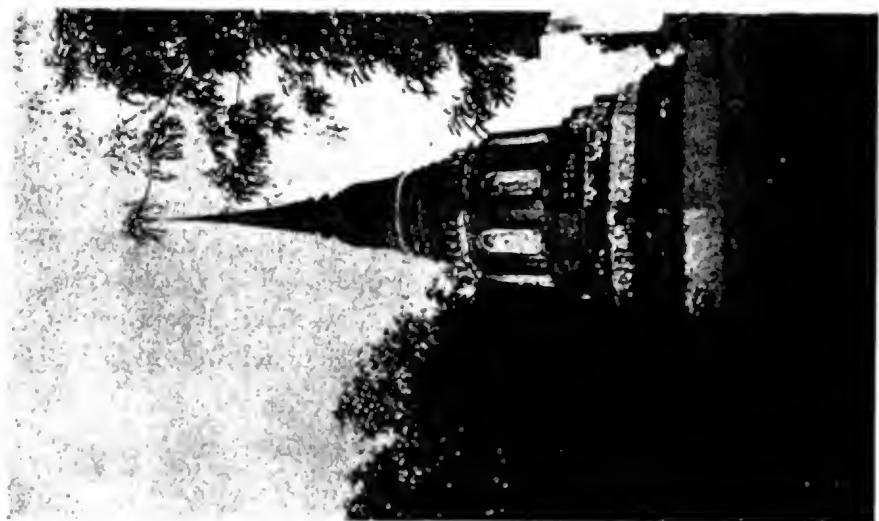
(Taksila is an old town standing on the banks of the Indus and the present Muang Tak or Raheng probably got its name from that Indian city, as it was the custom of the Indian settlers to name their new founded cities and Kingdoms after those in their fatherland). The date may seem ambiguous, but it must be remembered that there has been found in Lophburi (by H. E. Phya Boranrajatindr, the Viceroy of Ayuthia) an engraved stonepillar which, though bearing no date, by the archaic form of the letters points to a date not later than the VIth or VIIth century A. D., thereby confirming the approximate correctness of the date given by the Northern Chronicles, the accuracy of which is else, and with reason, so mistrusted. The language of the inscription is partly untranslatable with exception of some Mohn words, which record some gifts given to a *Buddhist* temple, and here an interesting question at once crops up. Who were the original dwellers of *Lavō*? Some authorities have thought that they were Mohn, which the foremost Mohn authority in this country, i. e., Rev. R. Halliday, has emphatically denied (see his paper J. of S. S. vol. X. part 3. p. 18) but at least they were a people speaking a Mohn-like language. Now whom have we left of a Mohn-like speaking people in Siam of to day? We have the Lawā of which scattered remains are still to be found in many places, principally in Northern Siam, but also in West Khorāt and Petchabūn, Nakon Svarga and Supan; these people speak a very Mohn-like language (see my paper in J. of S. S. vol. XII., part 3). I therefore believe that the original population in Lophburi as in the whole of the Mēnām valley was Lawā and that the untranslated part of the above mentioned stone-inscription is Lawā too, i. e., a more refined form of the Lawā tongue than the present



The Prang in Wat Mahā Thadu



Prāng at Wat Nakhon Kosā



Prachedi in Wat San Tung Thong

one, which probably represents a more primitive or degenerated form of their speech*. I also think with the late Colonel Gerini that Lavō may stand for Lawāpura, *i. e.*, the city of the Lawā. The Lawā were conquered and civilised in the first century of our Era, or perhaps much earlier, by Indian colonists, who set up an independent Kingdom at first, later on it was perhaps conquered by Funan, Cambodia's predecessor, thereafter subjugated by the Cambodians with whom the Indo-Lawā mixed to a great extent and finally in the end, the Thai came from the North and took possession. The present population should therefore be a mixture of Lawā, Indians, Cambodians and Thai or what is called *Thai-Khom*; N. W. of the town one finds two tambons peopled by Mohn, these are *not* aborigines but immigrants from the time of the wars between Burma and Siam about 350 years ago. We will now continue the account of the outer events in the history of Lophburi. The Nang Chām Dēvi chronicle tells us that in A. D. 654 a king or emperor of Lavō sent his daughter, named Nang Chām Dēvi, to govern *Haribhunjai*, the present Lampūn by which we see that the sway of Lophburi at that time stretched up to the Mēkong in the North. I have until quite recently doubted the accuracy of the date given for Nang Chām Dēvi's mission, believing it to be too ambiguous with regard to its antiquity (see my notes to the translation of Phra Phetchabūn's paper J. of S. S. vol. XIV part 1. p. 46), but subsequent reflection after a renewed visit to the ruins of Lophburi has brought me to believe that the date is probably correct. According to the Lampūn chronicle Lavō was attacked in A. D. 924 by a fleet from Ligor, *i. e.*, Nakon Sri Dharmaraj, but in A. D. 957 the kingdom was still a powerful one. After that time the kingdom was ruled, sometimes from Lavō sometimes from Ayuthia, *i. e.*, Dvaravati, the Hindu colony founded (on the island of the present Ayuthia) perhaps not a very long time after Lophburi. One of the rulers of Lavō, a certain King Chand Joti, altered the name of the city from Lavō to Lophburi and this King was about A. D. 1000 defeated by King

* This theory to which I was led little by little through my studies of the Lawā, I am happy to see, has now been confirmed by H. R. H. Prince Damrong who in his "Tio jam thang rot fai: Lophburi" says that the whole of the Ménam valley and the country as far up as Chieng Sen was formerly occupied by the Lawā, who had formed several Kingdoms of which Lavō was one.

Anuruddha, the mighty warrior King of Burma, and had to acknowledge his sovereignty. Soon after the death of King Anuruddha, however, the Siamese parts of his empire regained their independence, but instead of one, there were now three states, viz., Lampang, Sukhotai and Lophburi. Of these at least the two last were under Cambodian sovereignty, which is proved by another inscription from Lophburi (in Cambodian this time). It dates from the reign of King Suriyavarman I. (A. D. 1002-1049) and mentions gifts given to a temple dedicated to the God *Paramavasuleva*, i. e., Vishnu; Lophburi is herein called *Lvo*; the gifts consisted of bayadères, servants and rice from the land of *Vdan**; and *Dvar Jaluvinama* (the last named must have been the country lying around the present day Ayuthia; the second parts of its name signifying "dwellings at the sea" shows that Dvaravati lay near the sea). A later inscription, found by the famous French traveller and archaeologist Aymonier in *Wat Khoi* engraved on the back of a statue of Buddha, dates from about A. D. 1109. This inscription (which also was in Cambodian) as well as the temple itself I have not been able to trace in Lophburi; perhaps it is identical with the *Wat Khoi* at Klong Kum about 24 kilometres S. W. of Lophburi. Before continuing I may mention a fourth inscription seen also by Aymonier, at Bang-Pa-In; it is in Cambodian too and dates from King Sri Suriyavarman I's reign; its contents relate to the rules of life for the Buddhist monks. Aymonier thought the last inscription to originate from Lophburi too, but I understand that this is doubtful. According to a fifth inscription also in Cambodian engraved under a bas-relief representing the chief of Lavō leading his troops (to be seen in the galleries of Angkor Wat), it appears that at this time, probably about A. D. 1150, Lophburi like the rest of Siam was under Cambodian overlordship. We know that Sukhotai, as probably Lophburi also, cast off the Cambodian yoke about A. D. 1256 or 1257 and according to H. R. H. Prince Damrong's views Lophburi was finally conquered by Phraya Uthong shortly before he made Ayuthia his capital in A. D. 1350. The Chinese chroniclers tell us about two kingdoms in Siam, *Sien* and *Lo-hu*; the first one has been identified with Sukhotai and the second one with Lavō or Lophburi. According to the

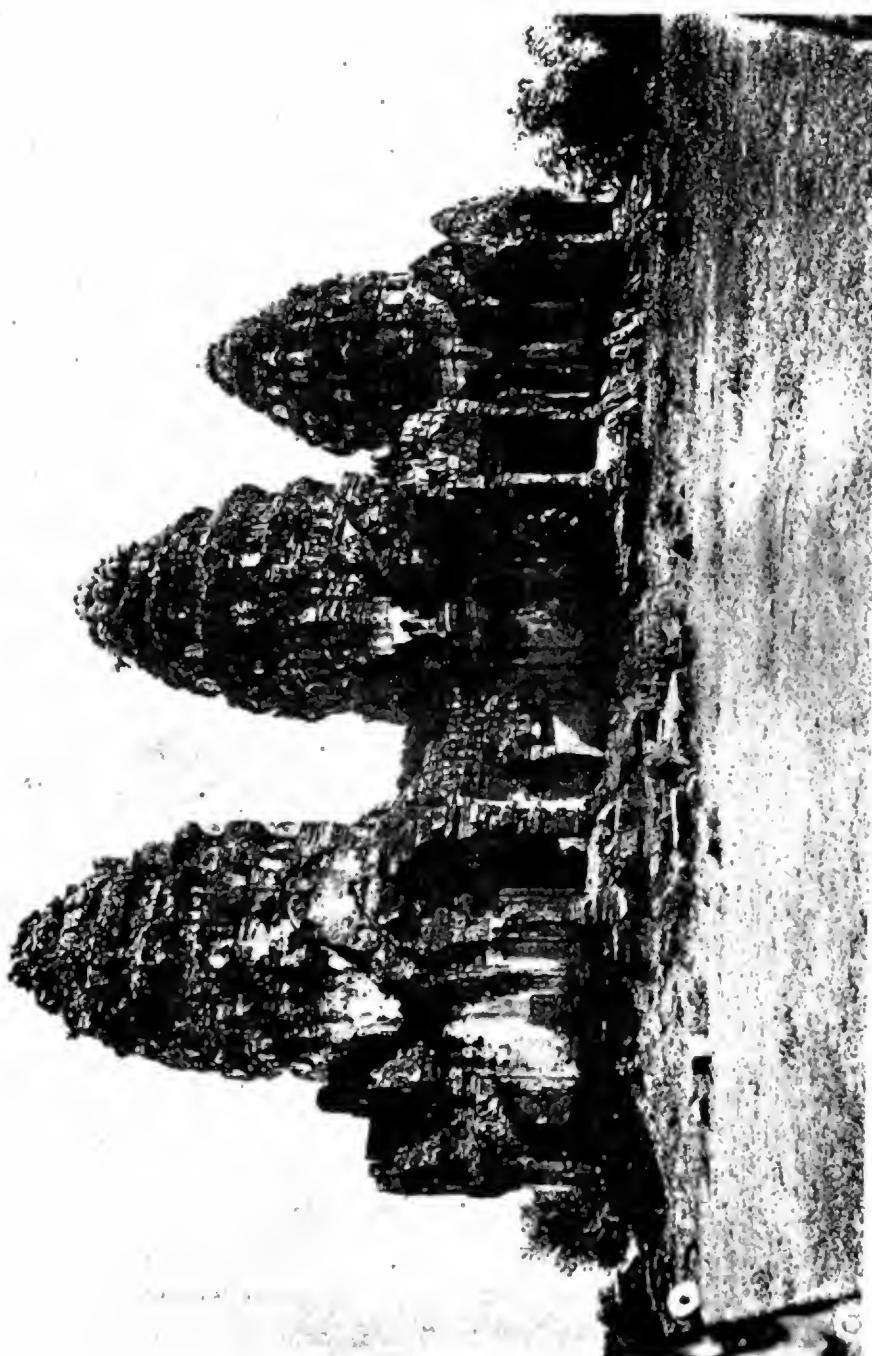
* Prince Damrong thinks that *Vdan* was the present Chaibadān at Nām Sak.



Vishnū's and Lakshmi's statues in San Phra Kāl



Dēvasathan or Phra Prāng Khék



Phra Prang Sam Yot seen from West

accounts about *Malayu*, a Malay kingdom in Sumatra, and parts of the Malay Peninsula, this Kingdom sent ambassadors and gifts contemporaneously with Lavo to China in A. D. 1299, which shows that Lavo though under Sukhotai's overlordship had still kept a sort of semi-independence at that time. When Phraya Utong in 1350 founded Ayuthia he appointed his son Phra Ramesvara to be ruler of Lophburi. As will be known, this title is still existing to-day, but its high bearer is at present viceroy of the Southern provinces in Malacca. The next time we hear something about Lophburi is during the first war between Burma and Siam, when it was conquered by the Burmese army in 1563. Five years later it was again taken by the Burmese, but the sojourn in this Siamese Capua proved too much for the Burmese soldiers, who were surprised and badly beaten by the King of Wieng Chandr, the latter having hurried to the assistance of the King of Siam, besieged in his capital by the Burmese. Notwithstanding this victory the Lao king was soon after defeated by the Burmese and had to retire to his own country; as a result of which Ayuthia was forced to surrender to the King of Burma. In 1581 we hear of one Yana Prajen strong in occult science — a "Pu Viset" in Siamese — who gathered a body of followers and occupied Lophburi only shortly after to meet his fate through a shot from a mutineer's musket. In 1602 Siam's famous warrior King Phra Naresvara, an ardent worshipper of Vishnu and Siva at the same time as of Buddha, went to stay at Lophburi for his pleasure, an example to be followed by one of his successors, the well known King Phra Narai Mahāraj. I do not intend here to relate in detail the events concerning Phra Narai's Reign — how the Greek adventurer, the talented Constantine Phaulcon, won the confidence and favour of the King to such an extent that he was raised to the rank of Chao Phraya Wichayen, how he constructed palaces and forts for the King and specially in Lophburi, which place King Narai had chosen for his summer residence since 1657, and further how Phaulcon induced the King to open diplomatic intercourse with France sending Siamese Ambassadors to Louis XIV.'s court and receiving French Ambassadors in Ayuthia and Lophburi; and finally how Phaulcon with his excessive zeal for converting the King to Christianity was together with his master overthrown by the envious noblemen, the leader of whom was Phra Phetraja, losing his life in

1688. All that has been described by various French writers (who call Lopburi Luvo), and has been set forth by Mr. Giblin, a former Director of the Survey Department, in his paper "Lopburi past and present", published in the Journal of the Siam Society in 1908, much better than I can do it. After the revolution in 1688 Lopburi fell into oblivion and its architectural splendours became mere ruins overgrown with jungle, in which state they remained for more than 150 years, until King Mongkut, the grandfather of His present Majesty, chose this as an occasional summer residence and repaired the walls of the citadel and one of the palaces (the wat-like Chandra-visal). Since then the town has revived and is now quite prosperous in a small way, situated as it is in one of Siam's most fertile regions.

II.

We will now start our sight-seeing,—beginning with the big temple lying close to the railway station and a little S. W. of the same. It is called *Nai Phra Dhatu*. Inside the brickwalls built in a spacious square, stands in the centre a tall "Prang" built of reddish sandstone; it is approached from the East by a steep staircase which leads up to a now empty room where in pre-Buddhist days an image of a Brahmin god was placed. The building is unmistakably Cambodian work. The foundations of two other towers are seen to the right and left of the "Prang," which is itself quite a fine example of the architectural skill of the creators of that stupendous and wonderful Angkor Wat. The other buildings inside the walls are of a later date, and distinctly Thai; so is the big Vihara adjoining the Prang to the East, also a Bôt South of the Vihara and another building serving as a sort of entrance lying to the North of the Prang, and so finally are the rows of prachedis and prangs inside the wall, all now in deplorable ruins. Inside the Bôt are a great many stone statues of the Buddha sitting on the Nâga, most of them of good workmanship. It is a pity that all this is allowed to fall into ruin,—one sighs for the Siamese Maecenas who will repair this grand temple. But will that ever happen? From this temple we follow the railway going North and, a few minutes after, we stop at a temple lying to the East of the line called *Nakon Khosa*. It consists of a brick "Prang" in Cambodian style, but was perhaps built by the Thai. Its



View of interior of Phra Prāng Sām Yot North to South



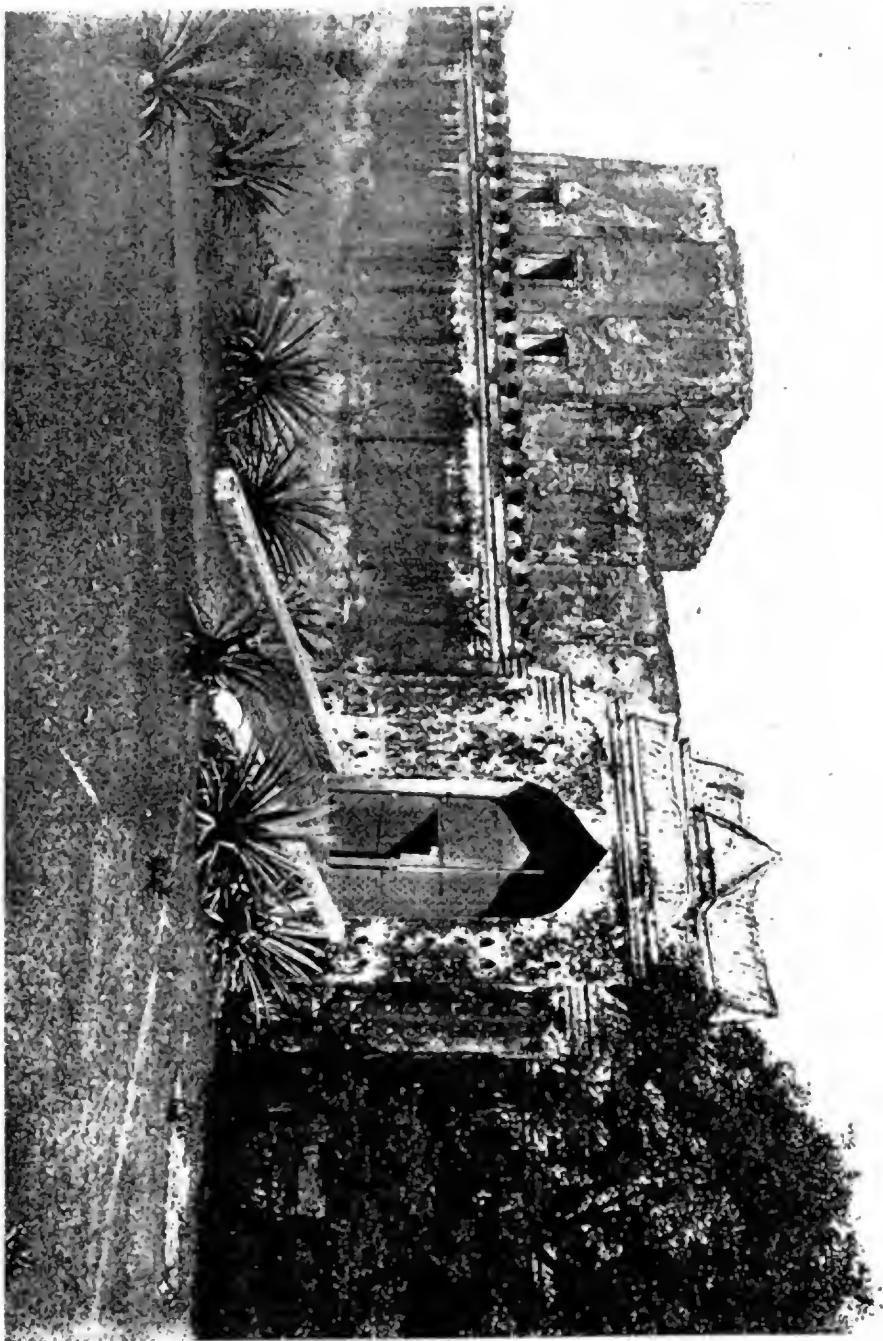
Buddha on the Nāga Central Tower of Phra Prāng Sām Yot

chamber opens to the East and on the three other sides are niches, two of which are empty, the third one containing a standing Buddha. Just behind this "Prang", which itself is built on the top of a small eminence, the ground rises rather abruptly in the shape of a tall conical hill, at the foot of which are the ruins of a small temple. The top of the hill is crowned with another building, of what nature it is difficult to say, as everything is covered with an impenetrable thorny jungle. Probably it is another Prang.* Just opposite, i. e., to the west of the railway line, are the ruins of a temple: a Vihara or Bôt, it is not certain which. Some well-made Buddha statues are seen here. This temple is called by some *Wat Phru Indra*, while others maintain that this is the name of the temple described as *Wat Nakon Khosa*, which name they give to the temple called *Phra Prang Sam Yot* later on to be visited by us. We continue our walk and shortly after arrive at what is called *Sân Song* (or *Sân Phra Kal*), i. e. the high sanctuary; it consists of a big pile of sandstone blocks and blocks made of this peculiar natural cement called "Silaleng" (laterite) and is built in form of a pyramid with two terraces. On the lower one, which is approached by a staircase from the West, an ugly, modern, iron-roofed shed has been erected, and in this, placed on an altar, are to be seen a standing image of a four armed Vishnu or Narai, having on his right hand a smaller image of the goddess Lakshmi; a fine female statue without a head is leaning to the wall behind the statue of Lakshmi. It is a curious fact that the Chinese especially adore and worship these statues, probably from a business instinct thinking it best to keep on good terms with the local genii! Behind this "*Sân Chao*" we mount some more steps and arrive on the top of the pyramid, where we find another brick building also of recent origin, inside which is seen a stone "somasutra", i. e., the stone on and in which the image of the god was placed. In the stone is cut a channel running round the sides of it and ending in an outlet behind the image. This was made to get rid of the soma or sacrificial drink which the Bhramins poured out in front of the god during the act of worship. A sculpture representing Vishnu lying on the snake Ananta is also kept in this building. A mighty

* Prince Danirong says that it was a stone temple on the crumpled remains of which a Vihara was built..

banyan tree grows close to the pyramid and in its leafy crown dwells a joyous company of monkeys, which are quite tame and will come down to accept fruit out of your hands. One is reminded of the, sacred monkeys living in Vishnu's temples in India. Who knows! They may be descendants of such animals from the time when Vishnu was *Paramulevi* in this venerable city. Not far from Sān Song on the other side of the railway line lies the finest of all the temples: *Phru Prang Sam Yot*. This temple consists of three towers, all built of sandstone and distinctly in Cambodian style but they are all connected with each other by galleries; the towers have doors to all four sides and are on the outside adorned with the sculptures typical of such buildings. As for instance, over the western door of the central tower the god Indra sitting on the three headed elephant and on the corners of the terraced superstructures, the sculptures of many Rishis (hermits). The snake motive so commonly seen over all Cambodian temple doors does not lack here too, but it is more or less destroyed, the sculptured stones having fallen down for the most part. Outside the western door of the central tower are seen a Buddha sitting on a snake, three torsos, of other sitting Buddhas (one of which is sitting on a snake), also 4 standing statues without heads. Judging from the ornamented belt of one of these, I believe it to represent a Bhramin god. The interior of the temple is a real treasury of sitting or standing images mostly of Buddha; in all 76. Of these 45 are sitting upon the 7 headed Naga; 4 may by reason of the diadems and the absence of customary monk's habit be supposed to represent the god Vishnu; there are other 18 sitting Buddhas (on the Lotus flower) and finally 13 standing ones. It is possible that some of the standing ones are representations of disciples. Some are placed in the windows of the galleries and throughout the longitudinal axis of the temple you see them sitting or standing everywhere, some hidden in niches and and some placed in the centre of the towers. All the statues are of sandstone, many covered with a layer of lacquer upon which formerly the gold-leaf was stuck. It is a curious fact that nowhere in Siam do you meet with so many Buddhas sitting on the Naga (*Phraya Nāk*) as here in Lopburi, a fact which may be explained by the existence of a special snake cult here in the olden days. On

Interior Wall with gate leading up to Phra Narai's Audience Hall





Constantin Phaulcon's house



The Water-reservoir in the Citadel. Note pipe-lines

the Eastern side of the temple is a brick building which quite spoils the "ensemble" of the temple. This building dates from Phra Narai's time, inside are seen a big sitting Buddha—well preserved—in the middle, and 7 smaller ones, of which four are sitting on the Nagas, some 6 or 7 well made heads, as also débris of a very big Buddha—the head alone is three feet long—are lying around. From these débris it can be seen how the statues were constructed, i.e., how they were built up of carved blocks and thereafter covered with a thick layer of lime. Leaving this temple we strike westwards and are soon in the centre of the old town, where is standing another monument: three brick built towers called *Dēvasuton* or *Phra Prang Khék*. The construction of the monument seems to have been begun by the Cambodians and finished by the Thai; the towers are quite well preserved. Of 2 smaller, square-formed buildings lying in front, i.e., East and S. E. of the towers, the last one is in the best condition having only lost its roof. It is a pity that the Chinese are permitted to use these buildings as latrines, as also that here, as at Nā Phra Dhatu, they are allowed to take bricks away from the ruins. Continuing towards the west we reach *Phaulcon's house* or palace consisting of 5 buildings constructed in a curious style, all rather narrow and with windows the form of which reminds one of the Saracenic style. Here resided the mighty minister with his Japanese wife and here he no doubt entertained the French noblemen, officers and also priests. One of the buildings farthest west was in fact a chapel. From Phaulcon's palace we turn to the left to reach the citadel and King Narai's palace, but before entering the citadel let us turn to the right and stop just for a moment to visit *Wat Sao Tung Thong* where a peculiar octagonal Prachedi attracts one's attention. In its whitewashed niches are seen golden figures of standing, walking or sitting Buddhas, which though undoubtedly of recent origin are still worth looking at.

The Vihara dates, in its original form, from the time of the foundation of Ayuthia (A. D. 1350). At the outskirts of the temple grounds lie two buildings, one called Tuk Pichu the other Tuk Kho-chasarn. According to the views of Prince Damrong the first name stands for the French word petit, i.e., small, while the other is derived from Khorassan a Persian province, these buildings being occupied

respectively by some French residents and the Persian ambassador to the court of Phra Narai. The citadel is surrounded by brick walls built in an oblong square and divided in to 3 courtyards; there are eight gates, two on each face. Each of the four corners of the citadel is built like a bastion and there are still traces of openings for the guns placed behind the walls. We enter the citadel by the N. E. gate, inside which is the house of the Governor; we are now in the first and lowest courtyard. Just opposite the Governor's house, *i. e.*, South, are the ruins of several two-storied houses, which served as magazins for the King. They are appropriately called "Phra Klang", one of the buildings being of more than ordinary interest by reason of the immense thickness of its walls and the remains of pipes debouching from the brickwork. This is the famous water reservoir, where the water led through under-ground pipes from Talo Chumsorn about 4 kilometres N. East of the town, was stored, and from here directed to the fountains and the bathing basins reserved for King Narai. A road between the Governor's house and the "Klang" leads through a tall gate up and into the inner courtyard on both sides of which were built stables for elephants. We do not, however, enter by this gate but turn to the left, still keeping inside the outer courtyard where we examine the ruins of the houses destined for the King's guests, also dungeons and fountains, whereafter we enter the second courtyard through a gate in the Southern part of the outer courtyard and see here the few remains left of King Narai's personal apartment called Phra Thi Nang Sutthasawan. Of the four basins described by Gervaise in his book about Luvo, nothing is to be seen now. From this courtyard we walk up the curious sloping approach to a gate leading into the 3rd and upper courtyard. We have at once on our left hand the ruins of the audience hall called Phra Thi Nang Thanya Maha Prasat, a tall ugly building now without a roof; the interior is not big. At the end of the hall is seen the window behind which the royal throne was placed and in which the King appeared when he received ambassadors in audience. According to Gervaise the walls of the hall were covered with large fine mirrors brought out from France and the building itself was covered with a pyramidal roof probably something like that of Dusit Mahā Prasat in the Chakkri palace. To the left of the audience hall are still two buildings more; namely,



Interior of Audience Hall from the East



The Audience Hall called Phra ti-nang
Dhanya Maha Prasat



Northern enciente of the Citadel with Pratu Wichayen i.e. the gate
where Phaulcon was arrested by Phra Phet Raja's Soldiers

the offices of the changvad and a wat-like one called *Chandrisal* built by King Mongkut. Behind these buildings were and are still today two long rows of buildings where in King Narai's time, his harem stayed. Standing in front of the government offices one sees a gate in the Northern wall. This is *Pratu Wichayen*, and here was Phaulcon arrested by Phra Phetraja's soldiers, later on to be led out into the forest at Tale Chubsorn and killed there. A lot of small niches will be observed in the gate buildings and in other places too; these were, according to Gervaise, ornamented with China vases on big days and — I believe — also used for placing lamps when illuminating the palace. The fortifications were no doubt constructed by M. de la Marre, a French military engineer, who probably also built the palaces and other buildings, which all look rather uncomfortably narrow and dark, besides being very ugly. The town is surrounded on three sides by high earthen walls and broad moats. Besides this there is an interior moat, which probably represents the old Cambodian town boundary. But let us mount a horse and make a tour out to the famous *Tale Chubsorn*. We clatter down through the streets, cross the railway line at Sān Song and are nearly at once in jungle. We cross the interior moat, which was formerly spanned by a fine brickbuilt bridge, and soon afterwards we see the tall red *Praṭu Phaniert*, outside which and just opposite is the "Phaniert"; i. e., the elephant kraal, an enclosure surrounded by high steep earthen walls. At its Eastern extremity is a small gap through which the elephants were driven into the kraal. We continue along a primitive cartroad through jungle and gardens, and now we stop again and there at our right hand is *Sra Kēo* which served as a sort of filter and from which the water was led through pipes into the city. Just opposite we see the tall red pile of an old Phrachedi called *Wat Sai*, quite overgrown with green bushes; and from here we soon reach *Pāk Chan*, the sluice through which the water was led out through a canal of the same name from Tale Chubsorn to *Sra Kēo*. From this place we follow the N. W. bank of Tale Chubsorn, from the top of which we look over this vast natural depression to the hills not far away, the sloping ground from the hills serving as one side of the embankments of the reservoir; on the other side were high earthen embankments. At present the reservoir is absolutely dry.

in the dry season; but in King Narai's time there was probably (according to Mr. Irwin, the late Adviser to the Survey Department) about 9 feet of water, so much that the King could have two small frigates navigating there. This reservoir has been named Chubsorn after the lake in which Rama dipped his arrows to harden them. We finally reach *Phra Thi Nung Yen*, the King's forest palace consisting of two not very pretentious looking buildings of the same style as those in the Citadel; it was here that the Jesuit astronomers observed an eclipse of the moon in the presence of King Narai. Just before reaching the royal forest villa one observes four small wooden "Sân Chaos" erected on the embankment of the Talé, these are called "*San Chaophraya Wichayen*" According to popular belief here was the place where Phaulcon met his death and the spirit-houses are erected to appease his spirit by the customary offerings. I think that this is the only instance of a "Farang spirit" so far to be worshipped in this country. We return by the same route but instead of entering the Pratu Phaniert we continue following the

moat Southwards finally crossing this at Pratu Khorāt (卜拉特門).¹

Though it sounds improbable, I believe that this name must have some connection with the town of Khorāt; perhaps in olden times pack-bullock caravans left for and arrived from Khorāt through this gate, of which only two pillars are left. From this gate we ride through dense jungle intersected with some few gardens to a place called San Paulo, where some few remains are left of the tower belonging to the church built by Phra Narai for the Jesuit fathers and from here we regain our quarters. There are still some few other places worth seeing, as for instance the tall phrachedi lying on an island Goh Kéo just above the town, at the famous Tung Thong Promthat, or some of the brick-built gates and bastions of which *Pratu Chai* on the Southern face of the city is a fine example. I finally take the opportunity here to tender my heartiest thanks to my friend Mr. J. J. McBeth, who took all the photographs illustrating this paper.



"Phra ti-nang Yen" King Phra Narai's Summer Villa
at Thalé Chubsorn



Pratu Chai or Southern City-gate of Mu'ang Lopbhuri



Some Notes upon the Development of the Commerce of Siam.

When we begin to consider the early trade of Siam we have to remember that away back beyond the time when actual evidence starts there lies a period of which we shall never know the history, and of which we can only venture to imagine something of the traffics and discoveries which were made.

We may imagine, not entirely without justification, that in that prehistoric time some degree of civilisation existed in this area: and we may add to that a further conjecture that foreign trade was carried on of a volume proportioned to the degree of civilisation, for it is one of the curious things about life that the more thoroughly a people engages itself in money-making — an engagement which, generally speaking, arouses almost the worst instincts of human nature — the more that people is progressing in the scale of civilisation.

We have very early evidence that there were trading relationships between neighbouring lands; and we know that such intercourse must have brought ships along the coasts of Siam. The evidence of the earliest trade between India and China is, of course uncertain. Kennedy, quoted by Sir William Hunter in his *History of British India*, "finds no positive evidence of an Indian sea-borne trade with Western Asia before 700 B. C." Hunter says: "The dawn of history discloses the Syrian trade-routes in the hands of Semitic races. The Chaldean or Babylonian merchants who brought up the Indian cargoes on the Persian Gulf, the half-nomad tribes who led the caravan from oasis to oasis around the margin of the central desert to Tyre or to the Nile, the Phœnician mariners who distributed the precious freights to the Mediterranean cities, were all of the Semitic type of mankind. The civilisation of ancient Egypt created the first great demand for the embalming spices, dyes, and fine products of the East. But as early as the fall of Troy (1184? B.C.), if we may still connect a date with the Æolic saga, Phœnician seamen had conveyed them northwards to Asia Minor and the Aegean Sea."

This early Indian trade is a fascinating subject, but it concerns us only for this reason — that there are grounds for supposing that concurrently with the Indian trade with the West there was Chinese trade with India. The Chinese junk of to-day is very little removed in appearance from the type of vessel which sailed from the ports of Phenicia. The Phoenicians probably pushed their trade as far as Malaya. Hunter says that the ancient Tao coinage or "Knife cash" of China has been ascribed to the sea traders from the Indian Ocean who, before 670 B. C., marked their bronze knives with distinctive symbols so as to convert them into a returnable currency.

Hunter also refers to an account, written about 535-547 A.D., of the trade with Malabar and the Eastern Archipelago, and the meeting of the sea traffic of Egypt and China in Ceylon.

Now it is claimed for Siam that her dominion extended as far as Johore. We may therefore assume that on the outward voyage in the N. E. monsoon the junks from China touched land with which the name of Siam has been connected. Furthermore, if the junks did not take the course outside Sumatra, and I think it very likely that they did not, they would, in beating up the Straits of Malacca, keep as far away as possible from the lee shore of Sumatra; and in all probability would put into a creek on the coast of the peninsula to water and take in fresh provisions before setting out on the long run to Ceylon. Such a creek might well have been on the coast of Kedah or on the island of Penang, whence they would have a favourable point to set their course so as to clear both Acheen Head and the Nicobars. I think it is highly probable that if there were any marketable commodities to be found along that coast, and anyone there prepared to do business, the Chinese, even of those days, would have been the last people to neglect the opportunity. Dye wood (sappan) and incense (gum-benzoin), may well have been loaded there. We have evidence of such trade later on on that coast.

But apart from this possible early connection with an all-sea trade route there were in existence land routes along which traffic between China and India may well have passed at a very early period. The shortest of these routes was that between Chumporn

and the Pak Chan river, but there were others starting from Chaiya, from Patiyu, and from Pran. Anderson, quoting Graevenveldt, mentions an "account in the history of the Liang dynasty (502-506) "of a place called Tun-Sun, on the narrowest part of the Malay Peninsula, that was the terminus of a trade route across it from the East, and along which the commerce of India and China was carried in those days, to escape the journey round the peninsula. According to this Chinese account, the town was famous for a wine "made from a tree." Thus early we have evidence of a trade in the famous nipa wine of Tenasserim, for where there was wine we may be sure there was traffic in it.

With this evidence to support us I think we are justified in believing that there was even earlier traffic across the peninsula. The Chinese navigator does not care to venture too far out from the land; and he would, therefore, try to avoid the open sea passage across the Bay of Bengal. Moreover, the full run from China to, say, Ceylon would have occupied almost six months; the return trip would have taken another six months, by which time the S. W. monsoon would have been changing; and there would have been very little time left in which to overhaul the junk, take in another cargo, get a much-needed rest, and yet catch the N. E. monsoon for the next voyage down from China. On the other hand, they would have run down from China to, say, Chumporn on the end of the N.E. monsoon, discharged their cargoes for carriage overland, and returned to China with the opening S. W. monsoon.

So much for conjectural traffic.

Bowring obtained from Wade, Chinese Secretary of the superintendency in China, an account of the relations between China and Siam: and it is in that account that we find the first actual evidence of the foreign traffic of Siam. The first allusion, in the Chinese records, is made in the period 303-416 A.D. The first record of a voyage to Siam comes in 608-621, when a Chinese officer of the Board of Works went to Siam. Could he have been going to settle a teak contract? In 1281-1366 tribute was sent to the Emperor of China. In 1386 a Chinese envoy was sent to Siam with thanks for 100 piculs of pepper and 100 piculs of sappan wood. In 1387 Siam

sent thirty elephants; and in 1389, 1700 piculs of sappan wood. In 1391 Siam obtained standards of the Chinese weights and measures.

Although the goods I have mentioned were not sent in the way of trade, but rather as tribute, it must be supposed that the ships which carried the tribute carried also some commercial cargo; and in 1403 there is a direct reference to a Siamese trader going ashore on the coast of Fuh Kien. In 1456 a Siamese envoy was sent to China to lodge a complaint about the plundering of a Siamese vessel by the Chams. The Chams were ordered to give compensation, but they retorted that they had merely paid back the Siamese in their own coin. In 1508 comes the first official record in the history of Siam of misdemeanour by the Customs, but it is to be observed that the offenders were not the Siamese, but the Chinese, the authorities at Canton having wrongfully levied duties on a Siamese ship which had been driven into port by stress of weather. In 1520 the collector of Customs at Canton lost his head, not figuratively but actually, for allowing one of his staff to trade with a Siamese ship. The laws against foreign trade are said to have been very strict at the time, but as ships with cargoes were voyaging back and fore it is only reasonable to suppose that there was some expectation of disposing of the cargoes; and probably the explanation is to be found in the general Eastern system of royal trading.

Records of trade intercourse with China continue until in 1722 it is found that the Emperor commanded the importation of 300,000 piculs of rice from Siam. Further cargoes were sent, and in the reign of the Emperor Yung Ching ninety-six Chinese sailors obtained permission not to return to China from Siam. From this I am disposed to think that the early Siamese trading ships were navigated by Chinese. We have records in the seventeenth century to support this view, and the Dutch treaty of 1664 contained a clause by which the King undertook not to employ Chinese sailors in his ships sailing to Japan.

In 1735 Siam asked that the restrictions upon the export of copper from China might be relaxed. The request was not granted. By this time the rice trade between China and Siam was well established, and in 1751 Chinese bringing up more than 2000 piculs of rice were rewarded with a mandarin button. If this rule had

remained in force some of our local Chinese friends would be more gloriously arrayed than the attendants at picture palaces.

In 1744 Chinese were permitted to build ships in Siam and to sail them to China for registration.

While this traffic was growing into a settled condition of commercial intercourse, trade was being opened up in other directions.

The first actual mention of a trading vessel in the China trade takes us back to 1403. There is a gap of nearly two centuries before a connection with Japan can be established. According to Satow, "The earliest extant record.....belongs to the year 1606, "when a letter was addressed by the Shōgun Ieyasu to the King "of Siam containing a request that some muskets, and incense known "to us as 'eagle-wood,' might be furnished to him. But there is no "doubt that commercial intercourse had taken place even before this, "for the original passports granted to Japanese junks trading to "Siam, or rather to the Malay states of Ligor and Patani, then, as "now, forming a part of the Siamese Kingdom, are still in existence, "dated as far back as 1592."

In 1599 and again in 1602 a junk belonging to Patani visited Japan, having an envoy on board. There is proof that in 1604 a Japanese merchant was resident in Siam, and that junks passed back and fore on his business, and between 1609 and 1615 there are records of ships' passports having been issued to various Europeans for trade with Siam. One, dated 1614, was issued to the famous Will Adams, the first Englishman to settle in Japan.

Satow gives a long account of the early seventeenth century trouble with the Japanese merchants and settlers in Ayuthia. In this it is mentioned that in 1633 there was a Japanese fleet of over 300 vessels at Ayuthia.

It is clear that the Japanese connection with Siam's commerce must have been very powerful; and concurrently with this traffic of Japanese ships there was considerable trade between the two countries which was in the hands of the English and Dutch, who were well established in Japan by this time, and competing with the Japanese for the Siam trade.

In 1636 Japan was closed to foreign intercourse, but an exception was made in favour of the Chinese, and the Dutch and English were permitted to trade with Nakasaki under very restricted conditions. The trade with Siam collapsed, as far as its former participants were concerned. It passed into the hands of the Chinese.

The principal commodities exchanged appear to have been, from Siam:—ivory, sappan wood, gunpowder, camphor, European cloth, gum, deer skins, hides, and ray skins; and from Japan:—horses, cotton cloth, lacquer work, tea, porcelain, and copper.

The pioneer seamen of China and Japan were almost as great figures, in their way, as Marco Polo—who returned from China by way of Malacca in 1295—as Columbus, da Gama, d'Albuquerque, Davis, and Drake. I say “in their way” because I think it unlikely that either the Chinese or the Japanese were prompted by a desire for adventure or discovery to embark on the stormy and unknown seas. Their voyages were probably merely the natural result of venturing time by time a little further along the coasts of the China Sea, in search of trade. They do not seem to me to have shown anything like the courage of, for instance, Bartholomeu Dias, who rounded the Cape of Good Hope—the Cape of Torments, as he called it—in 1486 with two ships of 50 tons, and put back only because his men rebelled.

But these Eastern navigators played their part in the development of Siam's trade, and while they were doing so certain daring Western adventurers were opening up the connection between Europe and this part of the world.

The success of the efforts to reach the East by sailing round the Cape of Good Hope may be attributed to a great extent to the Papal Bulls of 1493, 1506, and 1514, by which the Pope very kindly portioned out the unknown world between the Spaniards and the Portuguese. As the Spaniards claimed the western half of the Atlantic the Portuguese were forced to the East. In 1497 Vasco da Gama left the Tagus, a week or two after John Cabot, sailing from Bristol, on his way as he thought to India, had discovered North America; and in 1498 da Gama had sailed across the Southern Indian Ocean and reached Calicut. Others followed, and soon the Portuguese had established themselves—the first European powers

in the East. In 1508, with the object of cutting off the Mohammedan trade between Malacea and the Egyptian ports, de Sequeira was sent to Malacea ; and in 1511 d'Albuquerque captured and fortified the town.

From these days onwards until the nineteenth century the history of the Far Eastern trade is often a history of war also; and in the beginning it is a history of religious aggression as well. One wonders how far the militant missionary spirit of the West has been responsible for the existing hatreds. One wonders how far this country would have remained tolerant had the Western religious activities of the seventeenth century been successful. As human love is often but thinly divided from hatred, so it seems that the Christian religion, based on a gospel of love, has been singularly effective in arousing the worst passions of mankind.

The Portuguese were received peacefully in India. They found religious toleration ; they were not long in establishing a reputation for licentiousness and cruelty which has rarely been equalled. The expedition of 1500 under Cabral carried, besides a powerful armament, eight Franciscan friars, eight chaplains, and a chaplain major. The first act of this militant mission was to seize an Arab ship outside Calicut and another vessel in the harbour. This very successfully paved the way to a commercial and religious activity carried on at the point of the sword. Tavernier gives an interesting picture of the active side of religious life as it had developed in Goa in the seventeenth century.

But to return to the subject of this paper ; Anderson records that Tristan d'Acunha visited Tenasserim in 1516, and that in 1511 Fernandez was sent from Malacea by sea to Ayuthia, returning overland to Tenasserim. He also mentions " Antonio de Miranda de "Azevedo, the second envoy sent by d'Albuquerque to Ayuthia, had "as his companion Manuel Frageso, who went to report to d'Albu- "querque on all matters, 'merchandise, dresses, and customs of the "land, and of the latitude of the harbours.' They proceeded by sea "in the first instance to Taranque, and thence by land with horses "and draught-oxen to the city of Sião, and on their return they re- "ported that the peninsula was very narrow on that side where the "Chinese make their navigation, and that from thence it was only "ten days' journey to the coast of Tenasserim, Trang, and Tavoy."

It is established that at this time there was trade between Tenasserim, Ayuthia, and the Malacea Straits in benzoin and lac. The records of traffic, through Tenasserim, between Siam and the West, extending as far as Bengal and Cape Guardafui, are fairly full; and it is certain that the Portuguese were not long in making use of their establishment at Malacea to take their share in the trade.

In 1516 Coelho was sent as an envoy to Ayutlnia, and in the next year the Portuguese opened up trade with Patani. Anderson mentions that in 1538 there were three hundred Portuguese in the port.

Between 1563 and 1581 Caesar Frederick, of Venice, made a voyage to the East. He records that "there goeth another ship for the said Captaine of Malacea to Sion, to lade verzino" (Brazil wood). He also records the capture of the city of Sion by the king of Pegu in the year 1567. In the same account he mentions passing by sea near to the city of "Tenasari". "This city of "right belongeth to the kingdom of Sion, which is situate on a great "rivers side, which cometh out of the kingdom of Sion; and where "this river runneth into the sea there is a village called Mergim, in "whose harbour every yeere there lade some ships with Verzina, "Nypa, and Benjamin, a few cloves, nutmegs and maces which come "from the coast of Sion, but the greatest merchandise there is Ver- "zin and Nypa, which is an excellent wine, which is made from the "floure of a tree called Nyper. Whose liquour they distill, and so "make an excellent drinke cleare as christall, good to the mouth, "and better to the stomake,"* He goes on to speak of the medicinal virtues of this excellent wine in glowing terms and with a wealth of detail which, although interesting, make the passage somewhat unsuitable for inclusion in this paper.

Following upon the Portuguese came the Dutch, who, as Mr. Blankwaardt surmises in his excellent article in *l'Eveil Economique*, (November 1921), had probably visited Siam either on their own account or in the service of the Portuguese towards the end of the sixteenth century. Mr. Blankwaardt records that in 1601 van Neck made a contract with the queen of Patani concerning commerce

*Hakluyt's Voyages.

in pepper and the establishment of a factory. In 1603 van der Leek and van Waarwyek had visited Ayuthia. As a result of the latter visit the King of Siam decided to send an embassy to Holland; and in 1607 a party of four "mandarins" and minor officials sailed for Holland — the first Siamese to visit Europe.

In 1610 the Dutch had a station in Ayuthia, which was enlarged in 1612, and opened in 1613 by Brouwer. Dutch establishments were also set up at Junkt Ceylon, Ligor, and Singora, principally for the trade in tin — the Ayuthia establishment dealing mainly in hides and sappan wood for the Japanese trade.

The English had become acquainted with Siam before the close of the sixteenth century. In 1518 Master Will Barret records that "Belzuum Mandala comes from Sian."* I take this to be Benzoin.

About 1597 John Davis, whose name is for all time connected with the Arctic, visited the eastern coast of the peninsula. (In 1605 he was killed in Patani Bay in a fight with Japanese pirates). Anderson mentions that "By the end of the sixteenth century Siam (Ayuthia) and Temesserim had become known in England to merchants generally, as we find them mentioned in Foulke Grevil's report on the memorial submitted to Queen Elizabeth, in 1600, stating the reasons why English merchants might trade with the East Indies, especially to such rich kingdoms as were not subject to the king of Spain and Portugal."

At this period Patani was a flourishing port. It was "resorted to by ships from Srnat, Goa, and the Coromandel Coast, and by junks from China and Japan."* The English established themselves there in 1612. In the same year they had set foot and housed themselves in Ayuthia. Upon arrival at the bar "the native Shah-bandar of the port went down probably to receive King James' letter, but mainly with an eye to a personal present."* The Shah-bandar was the Customs or port officer; but that is a long time ago! From Ayuthia two Englishmen went to Chiengmai, to trade and to report upon the trading prospects.

* Anderson.

The establishment of both English and Dutch in Siam naturally led to their intrusion upon the Japanese trade. Anderson mentions that in 1617 the *Sea Adventure*, which was piloted by Will Adams, left Ayuthia for Japan with a cargo of 9,000 skins. It was a disastrous voyage: thirty-four of the crew died at sea, and upon the arrival of the ship in Japanese waters there were only twelve men on board able to work.

Visiting Patani now, one is hardly able to realise that, away back in the early seventeenth century, there were between four and five hundred Europeans living there. There is a record of ten Englishmen holding a sort of board meeting in the year 1615 — ten *Nai Hang* in fact — and the inference one draws is that the English colony must have been of considerable size.

It seems that the Europeans must have overestimated the volume of trade which was possible in Siam (the same fault has not been unknown in later days, I believe); and before long affairs began to go badly with the factories. It must be remembered that the western energy was not being applied to increasing production. The traders were solely engaged in buying and selling. Moreover, their activities in this respect were limited. As in other eastern courts the King of Siam was the chief merchant of the country; and commodities bought and sold passed through his hands; and, worse still from the point of view of trade, through the hands of his ministers and officials.

The temptation to intrigue, one nation against another, must therefore have been irresistible. There is no reason to believe that the early European traders bore the high character of their present-day successors; and there is no doubt that Ayuthia must have been a hot-bed of intrigue; with English, Dutch, Portuguese, Japanese, Indian, and Chinese all scheming against each other, and the Siamese officials sitting demurely looking on, and making a very reasonable profit out of the trouble. A dictaphone record of successive conversations between the "Barcalon" and the merchants would be worth listening to.

But it is to these rough mariner-merchants, these quarrelsome and often drunken pioneers, that Siam owes, primarily, the commerce which enables her to-day to stand firmly on her own feet among the

nations of the world. Throughout all the troublous years of the seventeenth and eighteenth centuries, when the kingdoms of India, Sumatra, and Java were falling before the advancing tide of western aggression there is hardly a suspicion that the conquest of Siam was ever seriously contemplated. Doubtless to the practical minds of the English and Dutch, bent on trade and trade only, the possible profit was not sufficiently tempting. And, on the whole, considering what trading conditions were in the East, the treatment the traders received was reasonably good.

The quarrels among the merchants reached their height when, in 1618, the English Council at Bantam decided to make war upon the Dutch for the satisfaction of their losses. The English captured on the 5th December the *Black Lion* "a richly laden ship, "with rice, pepper and other commodities from Patani..... In "April 1619, John Jourdain, president of the English factories, re- "turned from the coast of Coromandel, with the two ships the *Hound* "and the *Sampson* to 'new establish, both with men and means, the "almost decayed factories' of Jambi, Patani, Siam, and Succadana.... ".....They arrived at Patani in June 1619, to find the factory "disorganised by 'the base and idle carriage' of Edward Gillman... ".....Adam Denton went to the factory with the goods they had "brought, and resided there while the ship lay at anchor in the "harbour. John Jourdain's movements had, however, been carefully "observed by the Dutch, who no sooner knew he was at Patani, with "only two ships, than they sent Henrick Johnson in pursuit of him "with three well-appointed men-of-war, manned by 800 men. On "the 17th July, 1619, this strong naval division sailed into the har- "bour of Patani, and, taking up its position, at once attacked the "two English vessels. The surprise, however, had not been so "sudden but that the English president might have set sail and "engaged them at sea, where his chances of success might have been "greater; but he disdained to appear to have run before his enemy, "as his doing so might have damaged, in the opinion of the natives, "the reputation his nation had established for courage. He deter- "mined, therefore, to fight them in full view of the town, and ac- "cordingly never moved from his anchor while they bore down on "him — conduct which one of Jourdain's contemporaries said deser-

" ved 'favourable censure', a verdict which every admirer of courage " will accept. After a 'five glasses fight', 'their noble president' " says Marmaduke Steventon, who fought on board the *Hound*, ' was " slain in parley' with the Dutch commander, ' receiving his death " wound, with a musket, under the heart.'"

The survivors of this fight were taken prisoner by the Dutch. Their treatment was not all that it might have been, even in a brutal age. It is described fully by Anderson, who also says that the Queen of Patani undertook the protection of the English and their houses — at a price. Generally speaking, everything had a price, in those far-off days.

The trade appears to have shown no signs of improvement; for both the English and Dutch closed their factories in Ayuthia about the year 1623. But the Dutch were back again before 1629. I have obtained some figures of the rates of duty at this period, from *The History of the Second Reign*, by H.R.H. Prince Daunrong. There were five methods of securing a revenue from the trade, viz., by

- (1) Fees on passes — permissions to enter for trading. (Ka berk long or ka pak riaa).
- (2) Import duties.
- (3) Export duties.
- (4) Profit from the sale of Government commodities.
- (5) Pre-emption of import cargoes.

It does not appear, nor is it likely, that the trade had diminished. No doubt it had grown to some extent; but the Chinese had secured a firm hold on the eastern traffic, a hold which was strengthened after 1636, when Japan was closed to foreigners; and the trade of Mergui and Tenasscrim was probably carried largely first by Indian craft and later by Company's ships from Masulipatam and Madras. The Company's factory at Madras was established in 1639.

About 1660 trade seems to have improved, and the English factory in Ayuthia was re-settled in 1662. A letter to Surat describes the goods vendible in the Siam

*Anderson.

market. They are—cloths of various kinds, calicoes, chintzes, Joong-bees, and long-cloths. A letter from the authorities at Fort St. George, quoted by Anderson, describes the trade in 1663:—"The Moors supply Siam with goods, which they send *via* Tennassarre, "but they carry them 40, dayes by land, and pay severall customes, "and are at about 50^pto. and charges more than ye goods yt goe by "shipping, see yt if wee used yt Trade, wee shall quickly beato ym "out. The Dutch, it is true lade many shippes from thence, but ye "most of them carry provisions for Malacca and Batavia, the rest are "employed w^th Tynn, Elephants Teeth, Lead, and Sappan Wood, "there is alsoe brought unto the place by shipping all sorts of South- "Sea compo, silk, Gold, and pec. of $\frac{2}{2}$, Sugr, Dopp, Tuttanague, Am- "ber-Greece, Muske, Agula, Beniamen &c.....when Mr. Bland- "well was theire, there was 15 sayll of Dutch shippes, besides their "Japan fleete."

At this time the Dutch were more less at war with Siam, although it does not appear that their factory was closed; but in 1664 they concluded a treaty by which the King undertook not to employ any Chinese in his ships going to Japan, and by which, also the Dutch secured a monopoly of the trade in hides, and the King contracted to supply them with 10,000 piculs of sappan wood annually. In this treaty the Dutch attempted to secure freedom for their trade, and from the directness of the language used it is plain that the matter was considered to be one of great importance. "The Honourable Company shall be free to negotiate, deal, and "correspond with all persons no matter what rank they occupy "whenever the Honourable Company may choose to do so, without, "as has happened before, being interfered with either directly "or indirectly by anybody whosoever he may be." There is nothing of the language of secret diplomacy about that.

The treaty also furnishes the first reference to extra-territorial jurisdiction in Siam. The clause runs:—"Should (God forbid) any "of the Company's residents commit a grave crime in Siam, neither "the King nor the Siamese courts shall judge him, but he shall be "delivered to the chief of the Honourable Company, in order to be "punished according to Dutch law: and in case the said chief him- "self commit a capital crime, His Majesty shall have power to place

"him under arrest until notice shall have been given of the same
"to the Governor-General."

In 1662 the French made their first appearance in Siam, in the person of the Bishop of Bérythe. He was followed, in 1664, by Francis Pallu, Bishop of Heliopolis. The priests made every effort to interest the King in their faith, although they received what Anderson calls "a rude shock" when they found that religion, as well as commerce, is subject to competition—Mohammedan emissaries putting in an appearance in 1668 to urge the claims of their faith.

The Bishop of Heliopolis made a visit to Rome, and returned in 1673 with letters and presents from the Pope and Louis XIV. In 1676 and 1677 more missionaries arrived; and in 1680 came the traders, following their pioneer footsteps.

One does not like to question the motives of these notably good and brave men. Doubtless they were merely pawns moved at the will of the master minds in France, but it is not unreasonable to suppose that the development of Siam might have progressed much more quickly, and on different lines, had not some of these earnest but unpractical men set foot in the country.

A Siamese embassy was sent to France, and in 1685 de Chaumont arrived, to set the seal, as he thought, and as the sanguine de Choisy thought, upon the work of the missionaries. In their company was de Forbin, who remained to command the forces at Bangkok, and whose journal, like that of de Choisy, is interesting reading, if only on account of the simple egotism disclosed. It is quite clear that, like many another hopeful young man who has come to this country, de Forbin imagined that he was destined to sway the rod of empire in Siam; and it is equally clear that he imagined that he possessed the force of character to wrest that rod from the hands of Phaulkon. He was mistaken; he was a man of no character at all, but I am grateful to him for one thing—he has shown me where that old story of the elephant and the tailor—the tailor pricking the inquisitive trunk with his needle, and the annoyed animal passing on to return later with its trunk full of water wherewith to souse the tailor—where that dear old story of our childhood came from. The evidence is incontrovertible because de Forbin saw it happen!

De Choisy mentions the war with Golconda, and states that Siam had captured a vessel of Golconda, and that six Siamese vessels had been fitted out and armed, three commanded by Frenchmen, and three by Englishmen.

This embassy was the beginning of the downfall of Phaulkon. I have said that there is hardly a suspicion that the conquest of Siam was ever seriously contemplated. I made that statement in a qualified form because it is by no means certain what was in Phaulkon's mind, or in the minds of Louis XIV and of Colbert. The opinions of the English and Dutch traders are scarcely reliable. After his change of religion Phaulkon ceased to be a friend of either of the great companies; and the English, although at one time they suggested that King Charles should confer a title of honour upon him (the decoration bribe was not unknown then), were particularly bitter because of Phaulkon's former connection with their Company. Whatever were the motives which prompted the chief actors, there can be no doubt that the French mission of de Channont, followed by that of de la Loubère in 1687, opening up, apparently, the most glowing prospects, resulted in a disaster which involved not only the French but the whole trading community and the development of the country.

De la Loubère gives an indication of the commercial situation in his time. "The richest of the foreigners, and above all the Moors" have withdrawn elsewhere since the King has reserved to himself "nearly all the foreign trade. His royal father did the same and "perhaps it has been the policy of Siam to act thus from time to time. Nevertheless it is certain that commerce has nearly always been free and that it has often flourished in Siam. Fernand Mandez Pinto says that in his time there came every year more than a thousand foreign vessels; now there are only two or three Dutch "barques." He goes on to comment upon the heavy taxation of the people, on the corvée, and on the lack of circulation of the money collected as revenue, stating that much of it never returns to the people, but remains in the royal hands.

One result of this state of affairs was that the Indian merchants withdrew to Tenasserim and Mergui, where they had a free field for their trading operations. But Phaulkon resolved to have a

share in it for the King and for himself. He appointed, as Shah-bandar of Mergui, one Samuel White, a Company's servant. In addition to being Customs and port officer White was commercial agent for the King. It would appear that it was not remarkable in those days that a European Customs official should be expected to know something of commercial affairs. But that is a long time ago.

Before this had happened commerce had been growing very difficult in Ayuthia. The English factory had a large sum of money owing to them, and had petitioned, without result, for assistance in collecting the money. A cargo of English woollen manufactures, worth £10,000, arrived in 1681; but its sale does not appear to have helped the Company; for they began to make plans for leaving.

The Company's officers were unreliable — one of them explained away the absence of 500 chests of Japan copper by saying that they had been destroyed by white ants — and the King's officers were obstructive. Merchants were given no consideration; indeed they were imprisoned and pilloried; and things were plainly in a state of grave disorder. It is obvious that the primitive ideas of the court upon commerce were unsuited to the conditions of the trade; and one can see in all this welter of confusion, so prejudicial both to the interests of the country and of the traders, how unavoidable was the development of the safeguards which treaties and laws provide.

Both sides insisted upon the preservation of the monopoly system. As we have seen, the Dutch had secured a monopoly of the hide trade. They held also the privilege of being the sole tin buyers in Ligor, a privilege confirmed to them in 1668, in the ratification of their treaty of 1664. In 1675 the English were given a monopoly in tin in Chaiya, Chumporn, Tattang, and Pompin. Anderson thinks that Tattang is a small island in Chaiya Bay, and Pompin, or Phunphin, is situated on another island in the Bay. He is, I think, wrong. Tattang is Thalang, or Puket; and Pompin is Pang Nga, on the mainland north-east of Puket. The concession was obviously intended to give the English the control of the tin at both ends of the overland routes.

White at Mergui seems to have given most of his attention to naval operations against Golconda. He was soon in trouble, and was recalled to Ayuthia, where he was treated very coldly by

Phaulkon. While he was there the Macassar rebellion broke out, in which two English captains and four Frenchmen were killed. White returned to Mergui, and the Goleonda war was prosecuted until the relations between the English Company and the Siamese became so strained that at last the Company determined to seize Mergui. A ship was sent thither. High-handed action was taken by the English, which aroused the anger of the Siamese; and on the 14th July 1687 the people of Mergui broke bounds, and a massacre of the English ensued — White having the good fortune to make his escape.

De la Louhère arrived in 1687 with a large suite of officers and priests, and 1400 French soldiers commanded by General des Farges. The following year Phaulkon was dead, the French were driven out, and a new King was on the throne. The Dutch alone seem to have come untroubled through those troublous times.

Both English and French seem to have made efforts to resume commercial relationships with Siam, but apparently without any direct results upon trade. Indeed the president at Madras proposed a private subscription war against Siam. That president's name is known all over the world to-day. He was Elihu Yale, after whom Yale University was named.*

Trading conditions were not good. Piracy was only too common in the Indian seas; and it was at this time that the renowned Captain Kidd, sent out to suppress the evil-doers, found piracy so attractive an occupation that he became the worst pirate of them all.

A writer in 1678 gives a detailed account of the commerce of Siam at this time, an account which is to be found as an appendix to Anderson's *English Intercourse*. From this statement we find that the chief products of the country were:— Agilla or eaglewood, areca, sappan, elephants, saltpeter, lead, tin, ivory; "all wh. are engrossed by the King." His Majesty seems to have been content with about two-hundred *per cent.* profit upon his trading.

The "more vulgar commodities wherein all p'sons have liberty to trade" were iron, rice, "jagarah" (palm-sugar), timber, salt, raw hides, and "cheroon". Anderson fails to identify cheroon. It is possible that it may be Karaboon (camphor).†

* Anderson.

† Since this paper was read it has been suggested to me by Mr. Greg that "cheroon" may be the Arabic "Karun" (horn).

The imports were "Rawe and wrought silke, Quick Silver, Tutenague, Porellaine, Wrought copper, and Iron Pans".

Much of this import trade was not for home consumption but for sale elsewhere. Copper, spelter, and porcelain were, for instance, bartered for calico from Surat and the Coromandel coast.

The shipping consisted of one or two yearly ships to Japan, and Canton, and sometimes to Amoy. A King's ship was sent every year to Manila. Other shipping, excepting two or three vessels owned by other merchants, was in the hands of the Chinese.

The Dutch found their chief profit, at the end of the century, in their tin and hide monopolies, particularly the latter.

The information available concerning Siam's commerce in the eighteenth century is scanty. Conditions were by no means favourable to trade, for during the greater part of the century the country was the battlefield of invading and insurrectionary forces. The possession of Mergui and Tenasserim was lost; and Ayuthia was destroyed. The city where once foreign traders gathered in their hundreds ceased for ever to be a commercial centre. The condition of the country may be imagined from the fact that it was necessary to import rice to feed the people.

That some form of commercial enterprise still remained we know from the Chinese records already quoted; but, generally speaking, the trade of the country must have lain dormant.

With the establishment of peaceful conditions, trade began to awake again; but the European portion of that trade was no longer controlled by the great companies of the past, nor was it—and this is much more important—hampered by their jealousies and intrigues. The trade which was slowly but surely being built up was a fair trade, subject to the ordinary conditions of business competition. The day of monopolist companies had passed. They had served their purpose in a period when private enterprise, far away from the big markets of the world, was an impossibility; and having fulfilled their mission, Time, in the pleasantly casual way he has with his servants, dropped them gently into the stream.

Royal trading continued until the reign of King Phra Nang Klae, who upon his accession announced his intention of not being a "King merchant". I have the particulars, taken from H.R.H.

Prince Daunrong's *History of the Second Reign*, of an interesting voyage made by a ship, under Government instruction, in the year 1818. She appears to have sailed from Trang, carrying elephants and tin.

Value of Cargo:—	Ticals		Ticals
Elephants	8862	Cargo sold in India for	
Tin	8430	Elephants	7206
Labour	1958	Tin	10851
	<hr/>		<hr/>
Total	19250	Total	18057
	<hr/>		<hr/>
Less — Ku Tanniem	2022		
Wages	1232		
	<hr/>		<hr/>
	3254	3254	
	<hr/>		<hr/>
Net total	14803		
A loss of	4447		
	<hr/>		<hr/>
	19250		
	<hr/>		<hr/>

But the transaction did not stop there. The instructions were to bring back certain white cloth. The Indian merchant, however, was unable to furnish this cloth, and asked that the ship might return for it in the following year; but he supplied four kinds of white cloth of a total value of Ticals 4350.

Washing and Ironing this cloth cost Ticals 457 (the dhobie was doing well). The value of the cargo was, therefore, Ticals 4807. "Therefore," says the letter from which I quote, "the Indian dealer still owes the ship Ticals 9956." (I make the figure Ticals 9996, but the account is near enough to accuracy for our purpose.) And Phya Nakon is ordered to fit out the ship with elephants and tin the next year, to take this debt in cloth.

From a mere outsider's point of view, it seems that it would have been cheaper to bring the ship back light, and cut the loss of the 4447 ticals made on the outward voyage; for it will be observed that the shortage referred to in the letter is not on the capital ex-

penditure, but on the proceeds of the sale, by which, as I have shown, a loss of Ticals 4447 had already been incurred.

It was a poor commercial effort, but a fine example of the folly of government trading; a lesson which the world seems to be slow to learn.

"As it was in the beginning
Is to-day official sinning
And shall be for evermore."

Crawfurd gives some interesting details of the trade of Bangkok in 1822, putting the whole of the Siam-China trade, carried in about 140 junks, at 561,500 piculs; and the trade with the Straits, Cochin-China, and the Gulf ports, carried in 200 junks, at 450,000 piculs. Outside the junk traffic, commercial intercourse seems to have been negligible, except for a certain amount of trade with Penang by the overland routes.

The land routes to Mergui and Pak Chan were closed to trade after the Burmese conquest, and it is only in the last few years that the last named route has been re-opened as a road. When I crossed it a few years back it was hardly even a track. Fraser crossed it in 1861 and found it rather trying. However he obtained some satisfaction from his exploit, for he records solemnly in his official report that it is "a route quite unknown and has never been traversed by Europeans." * Apart from the traffic of centuries, an official of his own government — Tremenheere — had crossed and reported upon it only eighteen years before.

Harris, of Burney's embassy, speaks of the still existing traffic between Chaiya and Pung Nga, and on the southern routes, Trang to Nakorn Sritamaraj and Kedah to Singora.

In Crawfurd's time the pepper produced in Siam was estimated at 60,000 piculs; sticklac 16,000 piculs; sappan wood at 30,000; ivory at 1,000; and fine cardamums at 500. Teak was used as formerly in ship-building, but very little was exported. One interesting piece of information given by Crawfurd is that "passengers form the most valuable importation from China to Siam. The rate of passage money between Bangkok and Amoy is eight Spanish dollars, and between Bangkok and Changlin six Spanish dollars —

* "Miscellaneous Papers relating to Indo-China,"

"ready money in both cases. The commander furnishes provisions. "A single junk has been known to bring 1200 passengers to Bangkok; and I am told that the annual immigrations into that place "may be moderately estimated at seven thousand."

In 1824 came Hunter, the first British-born merchant to reside in Bangkok. Mr. Adey Moore says that in 1835 Hunter had four vessels annually making voyages for him.

In 1822 the Crawfurd mission, and in 1825 the Burney mission, came to Bangkok. The latter resulted in the abolition of the heavy duty charges on imports and exports, and substituted a uniform measurement duty — a bad arrangement, but, judging by its effects, a much better one than the system it superseded, undoubtedly because it put an end to the irregular and oppressive assessment of duties. One very important clause in Burney's treaty stipulated that merchants "shall be allowed to buy and sell without the intervention of other persons." In another clause it was stipulated that merchants "shall be protected and permitted to buy and sell with facility." One hundred and fifty years had passed since the Dutch attempted to secure the same reasonable privilege, but still the country had not learned how essential is liberty to trade. It was a very important matter, for, although the King had ceased to be a "King merchant," the right of pre-emption was still claimed and exercised by the Government officials, and trade was very seriously hampered. Crawfurd mentions that an American ship which came to Bangkok to complete its cargo by taking in a small quantity of sugar, was kept waiting for about six weeks before it was allowed to receive its cargo.

Ruschenberger, the chronicler of the Roberts American Mission of 1836, says that only two American vessels had visited Bangkok in eight years, although at one time there had been at least 2200 tons of American shipping in the trade.

This writer gives particulars of the commerce in his time, although it is not clear whether he is giving figures of production or of foreign commerce. I think much of it is inland traffic.

The principal figures are

Paddy	...	1,696,423	piculs
Teak	...	127,000	trees

Sappan wood	...	200,000	piculs
Coconut oil	...	600,000	"
Sugar	...	96,000	"
Palm sugar	...	150,000	jars
Salt	...	8,000	coyans
Pepper	...	38,000	piculs
Cardamums	...	4,550	"
Sticklac	...	8,000	"
Iron	...	20,000	"
Ivory	...	300	"
Gamboge	...	200	"
Deer horns	...	26,000	pairs
Buffalo hides	...	500	pieces
Cow hides	...	100,000	"
Benjamin	...	100	piculs
Dried fish	...	19,000	"
Rosewood	...	200,000	"

But although the treaty appeared to have cleared the way to commercial freedom, affairs were still far from satisfactory. Mr. Adey Moore quotes some of Hunter's troubles; and whether or not Hunter's case was quite as sound as he made it out to be it is apparent that the Government was still far from realising its responsibilities.

Pallegoix records, with eloquent indignation, the great number of monopolies which existed in his day and blames an English Ambassador for suggesting the idea to the King. These monopolies were "farms": and the good bishop probably forgot that France and England had both the same form of revenue collection in the days when their revenue services were still in their infancy. The farm system is always bad, but the Government was at least reaching out for control and had definitely abandoned state trading.

I do not think the Bishop was a sound authority upon commerce. Incidentally he mentions that the measurement duty of 1700 ticals per wah was made expressly to hinder Europeans, and especially the English, in their trading. It was, of course, the rate agreed upon when Burney made his treaty. But the Bishop thinks that a measurement duty by which a cheap cargo paid as much duty

as a valuable one was a very reasonable and even advantageous system. The trading community expressed their opinion in results when the system was changed.

Bowring's treaty of 1856 was the inevitable outcome of the existing state of affairs, and its value may be judged by the remarkable development of Siam's trade since the treaty was made, a development which would not have been possible if the safeguards and assurances provided by the treaty had not been secured. It must not be overlooked, however, that there were other important agencies at work. The treaty was made at a time when the Throne was occupied by an enlightened and enterprising Monarch whose life was devoted with singular faithfulness to the interests of his country. It was a time, also when steam was taking the place of sail (the first steam ship was brought to Bangkok by Hunter in 1843); and cargoes could be carried up and down the Gulf independently of the monsoons. As steam vessels increased, the junk traffic, and with it the Chinese control, diminished. One after another the trading nations of the world — some of them nations which had borne no share of the heat and burden of the pioneer days — copied Bowring's treaty. Consulates were established, and under their shelter, secured from oppression and guaranteed against injury resulting from caprice and corruption, the foreign merchants built up, in a country which was only just beginning to learn the art of good government, the substantial edifice of commercial prosperity which we see to-day.

A comparative appendix shows the growth of Siam's commerce.

Looking back over the history of Siam's commerce, two remarkable features stand out above all others.

The first is that throughout the whole period we are dealing with the same export commodities. The trade has been extended only in quantity, and not in variety. There are few countries of which this can be said; there are few countries which have been so long in contact with trade and have still retained their primitive commercial characteristics. The centuries have added no new products of the soil, produced no new craftsmanship. Furthermore they have not seen the growth of a native commercial community. While the people of Siam have progressed in the art of government and

have developed great ability in directing and controlling official affairs, they have acquired no powers of judgment or application in connection with the affairs of commerce. Their business ability has not risen above the stage of bargaining. The spirit of commerce has passed them by, although the lure of profit has not; and they remain aloof, untaught, and disinclined to learn.

This brings me to my second point, which is that the commercial development of Siam has at all times been in the hands of foreigners. Setting on one side the Royal and official traders, who merely bought and sold commodities which their power enabled them to control, it is a startling fact that the trading houses have always been foreign, and that even the ships, built in Siam of Siamese timber, and carrying Siamese produce, have been manned and piloted almost entirely by foreigners—Chinese, Japanese, Indian, and European.*

I cannot close without inviting you to think of the men to whom Siam owes its emergence from the obscurity of a veiled Eastern existence; those rough-tongued, hard-living merchant adventurers of the West, who, attracted by the hope of glory as well as by the lust of gain, set out in their small craft across the uncharted seas, fearful of dangers natural and supernatural, yet daring all.

There are great names among them, names which have come down through the centuries, and will pass on to future generations: great names whose lustre is reflected on this country.

Their bones lie on the sea-floors of these coasts, and in the grass-grown forgotten corners of sleepy townships; but their work stands.

Note.—During the last few years a beginning has been attempted with a Siamese-manned commercial fleet. The development of this enterprise will be watched by all with sympathetic interest.

Appendix.

Comparison of Trade Figures at different periods during the last seventy years. The figures for 1850 are those given by Mgr. Pallegoix. They do not appear to be at all reliable, many of them being obviously overestimated.

The figures for 1919-20 are not the latest available, but that year is taken as the last year of comparatively normal trade except for the Rice exports.

PRINCIPAL COMMODITIES.		1850.	1892.	1901.	1919-20.			
Agilla Wood	Pcls.	6,000	Pcls.	475	Pcls.	703	Pcls.	1,072
Benzoin	"	200	"	587	"	168	"	74
Cardamoms	"	6,700	"	2,970	"	2,437	"	5,365
Coconut Oil	"	700,000	"	..	"	..	"	..
Cotton	Bales	200,000	"	8,782	"	5,931	"	6,423
Fish	Pcls.	190,000	"	119,154	"	277,201	"	156,729
Gamboge	"	600	"	282	"	45	"	649
Hides—Buffalo and Cow	Skins	120,000	"	19,224	"	19,434	"	60,270
" Deer	"	"	{ Skins	18,424	{ Skins	15,952	Skins	215,658
"	"	"	{ Pcls.	7,682	{ Pcls.	60,808	"	"
Horns—Deer	Pairs	30,000	{ Pairs	1,472	{ Pairs	2,120	{ Pairs	250
"	"	"	{ Pcls.	404	{ Pcls.	412	{ Pcls.	381
Indigo	Pots	60,000	"	"	"	1	"	"
Iron	Pcls.	20,000	"	"	"	..	"	"
Ivory	"	500	"	45	"	58	"	17
Pepper	"	70,000	"	19,787	"	18,424	"	16,544
Rice	Coyans	15,000,000*	"	8,426,786	"	11,516,731	"	7,409,453†
Salt	"	12,000	"	16,698	"	35,065	"	1,048,802
Sappan Wood	Pcls.	500,000,	"	84,814	"	13,222	"	61,111
Sticklac	"	11,000	"	4,851	"	9,881	"	17,863
Sugar	"	250,000	"	454	"	17	"	71,775
" Palm	Jars	180,000	"	"	"	..	"	"
Teak	Trees	130,000	{ Tons	11,444	{ Tons	38,507	Tons	70,202
			{ Pcls.	3,894	{ Pcls.	66,688		

	1892.	1901.	1919-20.
Total Value of Trade:—	£	£	£
Imports	1,338,462	2,893,032	12,272,968
Exports	1,431,936	4,589,222	15,718,170

* This figure is plainly absurd.

† Average export in normal years = Pcls. 18,000,000.



Pattani Guns and Foundry Site.

The following note on the guns cast at Pattani mentioned in Mr. Sewell's recent paper on "Some old Siamese Guns" has been contributed by Mr. John Bowen, of the Royal Department of Mines, Pattani :—

The site of the foundry where the Pattani guns were made is a short distance to the East of the ruined Mosque on the Pattani-Jering road. The road passes through the site, which is unmistakable owing to the barren and burnt nature of the soil—which contains pieces of old iron, and portions of pottery that appear to have been used to smelt the metal and to which is attached slag, but beyond this, there is nothing in the way of ruins to indicate the site.

This area is known as "Dalam Cota," which was translated to me as "Within the walls," and is near to Campong Kersek, the biggest hutment in the locality. Its age is estimated to be upwards of 200 years—based on the fact that the ruined Mosque is over 100 years old and that the foundry antedates that very considerably.

The translation given above, led me to enquire about these walls, and two Malays of about 40 to 50 years of age, took me to a spot about 150 yds. to the East of the Mosque, where I was shown some high banklike ground. These men claimed that this was originally an earth and brick wall surrounding the whole foundry area.

Two gates are reported to have existed, one on the East and the other on the West side of the enclosure. The Western gate is supposed to have been almost on the road, and there certainly exist numbers of large bricks in the vicinity, far bigger than those manufactured there in these days. Big blocks resembling concrete are to be found also. The cementing material is mostly of a gravelly nature, and contains a small proportion of crushed sea shells.

Outside the walls is a moat some 30 metres in width, the present bottom of which is rather less than 3 metres below the walls. This is said to extend around Dalam Cota, and connects with the sea in both directions, via some inlets. I investigated this for a short distance on each side of the road. The moat is certainly quite well

defined here, and is now utilized for the growing of Paddy for which purpose it appears very suitable owing to the moisture it contains.

Some 20 to 30 years ago — whilst the residents were tilling the soil — the skeleton of an old boat was discovered. The suggested dimensions were :—Beam 9 yds., Length 18 yds., and as only the skeleton of the boat was found, the depth was difficult to determine. These dimensions are probably much exaggerated, but easily conform to possibilities, for the moat is certainly large enough to contain such a vessel.

Timber from this old boat has been used to build houses in the neighbourhood, but my Malay informant was not prepared to show me any of it.

With the boat were found pieces of old fibre rope the thickness of a man's ankle.

Only three large guns are said to have been manufactured at Dalam Cota. Their names as known locally are "Sri Negri" the biggest, "Toh Buak" and "Too Dhu Lia."

Two of these are at Bangkok, the third was lost at sea.

Local tradition says that the guns were for military use in the province, and that they were made by Malays, but on my suggesting that perhaps Chinese had done the work, it was agreed that this might easily be so. Small coins, about half an inch in diameter on which were inscribed Chinese or Arabic characters, have been found near the foundry site, but none were in a sufficient state of preservation to allow of their removal and keeping.

Abdul Kadir had it that the guns were supposed to have been made by Arabians, but that in all probability they were the work of Chinese.

One Malay declares that he still possesses a cannon ball of iron. It is about 4 inches in diameter and is said to have been made at Dalam Cota.

166
Correction. In Mr. Sewell's paper on "Some old Siamese Guns"

(S. S. Journal Vol. XV. part 1) page 2 line 12. for "(approx. 15 grammes)" and "(approx. 1.2 kg.)" read (1 baht = approx. 15 grammes) and (1 chang=approx. 1.2 kg.) respectively.



(486)

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